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TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

WITH

AN ABSTRACT OF THE PROCEEDINGS AT BOARD AND GENERAL MEETINGS, AND THE PREMIUMS OFFERED BY THE SOCIETY IN 1919

PUBLISHED ANNUALLY

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TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

SCOTTISH AGRICULTURE DURING THE WAR.

By CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan.[1]

THE war from which we are emerging has been, in a degree never before experienced, a war of nations and peoples rather than of governments and "powers"; and this has been a fact of far-reaching consequence. That the growth of democracy necessarily gives a new character to war had, of course, been perceived long ago by students of the subject. Clausewitz had traced back to the principles and passions of the French Revolution the origin, in modern times, of warfare on a national scale, absorbing the energies of the whole population; Bismarck had prophesied that "the war of 1870 will be child's play compared with that of to-morrow"; and Foch wrote seventeen years ago that "such features as war already possessed at the beginning of the nineteenth century are still more marked at the end of the century: a national war; a war of numbers; a war violent and at quick march," and had characterised modern warfare as essentially a war of violence, as contrasted with the warfare of manœuvre, which was diplomatic or dynastic rather than national in its inspiration, and correspondingly unlikely to bring into action the whole energy of a people. For

[1] The Appendices accompanying this Article have been compiled from material drawn from official and private sources, by Mr James Wyllie, B.Sc., of the West of Scotland Agricultural College.

the soldier, this perception of the character of modern war means a new view of the objects and methods of battle. For the civilian, it means that war is not only an affair of soldiers, but, for the time, if it is to be successfully waged, an altogether new direction given to the life and energy of the nation, which must be turned from every other object of business or pleasure, and devoted with absolute concentration to self-defence and the destruction of the enemy.

But whatever degree of foresight the best students of war may have possessed, none of them, I think, can have realised—none at all events did actually foretell—how war would engulf the peoples of Europe, how commerce, industry, and human welfare itself would, for the time, become only factors in the struggle, rather than the culminations of successful effort. It could hardly have been otherwise; for no previous experience had prepared mankind for the degree in which the natural forces developed by industry would be diverted from their normal use and turned to the purposes of war—how the ploughshare would become a sword and the pruning-hook a spear, and all the results of science, pursued in peace, be made agents for the destruction of that human life which they were intended to protect and embellish.

But the degree in which manufacturing industry was harnessed to the car of war was only one of the ways in which the civil populations became entangled in the fight.

Food Supply and the War.

From a comparatively early period the war became, in one of its main issues, a contest of food supply. This has, of course, always been an aspect of great wars: famine and pestilence are their grim followers. But never previously has there been a war in which the question of food supply has been believed so to dominate the situation and determine the result. Alike in Britain and in Germany there were many who, at various periods of the war, looked to the starvation of the enemy for a successful issue; and while we do not yet know how far food problems did actually determine the result for Germany, or how far they would eventually have determined it if the Allied armies had failed to secure their military triumph, we do know that only the vigilance and resource of the British navy and the never-failing courage of our mercantile marine protected Britain from a degree of scarcity which could not long have been endured, and that, in spite of every effort, we were, in point of fact, for a considerable time, left with no margin to separate us from actual want.

The direct cause of food shortage, both in Germany and in

Britain, was, of course, the deliberate effort of each to cut off the supplies of the other. The submarine attack on our sea-borne food—an ill-advised provocation—led to the blockade and its effects. Food supply became one of the objects of attack.

During our wars with France between 1793 and 1815 a somewhat similar condition had prevailed. In the later stage of that long struggle, an attempted commercial blockade against this country was added to naval and military warfare; and in 1812 the hostility of Russia and Denmark, and the taxation of grain exports by Prussia, together with the enormous cost of sea transport of corn, raised the price of wheat to 155s. a quarter. On the other hand, in spite of a series of adverse harvests, during these years of war the actual production of British corn was not reduced. Britain, which had in 1792 for the last time been, on balance, a corn-exporting country, was almost self-supporting.

The same climatic conditions which curtailed production at home prevailed throughout European countries whose contributions to Britain's food supply were as yet only supplemented to a slight extent from America; and although, by a curious irony, an abundant French harvest supplied her with corn in 1808, yet Britain was principally dependent on home-grown food, and the scarcity which constantly threatened her was mainly due to bad harvests, compensated in the later stages of the war by an increased area under wheat.

Very different was the situation in which we stood in 1914. Never before had the recorded arable area of Britain been so small. The acres under cereals and green crops, which in the five years, 1871-75, had averaged, in England and Wales, 9,190,949, and in Scotland 2,053,546, had fallen to 6,748,610 and 1,757,136 respectively,[1] while the population of Great Britain had increased during the same period from 26,072,284 to 41,707,851.[2] Only two months' supply of bread-corn was produced in the country, the remaining ten months having to be provided for, not only from abroad but, to an increasing extent, from the more distant sources of supply. During the same period our annual imports of beef, mutton, pork, bacon, ham, butter, margarine and cheese, had increased from 5,502,043 cwts. to 28,406,776 cwts.[3]

But the failure of our food production, not merely to keep pace with our growth in population, but even to maintain itself at its level of forty years ago, did not only mean that the actual supply of food in the country was so small as to expose us to the risk of rapid starvation. It meant also that we had lost the capacity for production. The land, indeed, was still

[1] Appendix I., Table XVII., p. 60. [2] Appendix I., Table XX., p. 61.
[3] Appendix I., Table XIX., p. 61.

there, but its equipment was lacking. It had not the steadings, the drains, the implements, the horses, and—most serious of all—it had not the men necessary to enable it to yield the food supply which in full cultivation it was capable of producing. Unpreparedness was our general state as a people when war found us asleep in 1914. But in nothing was our unpreparedness greater than in the essential matters of food supply and food production.

Not only were we ourselves unprepared as producers, but we were also confronted by a situation in which increased agricultural production had already, even under peace conditions, become evidently desirable. Rising prices during the years immediately preceding the war had given a clear indication that the available food supply of the world had for the time, at all events, ceased to keep pace with the growth of demand. More and more distant fields of production were being brought under contribution, as the nearer regions exhausted their virgin soils and became more populous. Food supply had already presented itself as one of the problems of the future—a future which might even seem to contain some approximation to Malthus's grim foreboding of persons "for whom no place is set at the table of Nature."

But any such general tendency, indicative as its symptoms might be, became submerged in the immediate problem created by war. The more distant the markets from which we must draw supplies in war-time, the greater the perils of the voyage, and the greater also the drain upon merchant shipping, already enormously employed in the transport of men and munitions to the theatres of war, and in the supply service of a vast Navy.

The Government and Food Production.

It was a proof, perhaps, of the slow awakening of the responsible Government, certainly of the implicit and unshakable reliance of the whole people of Britain upon the Navy, that, after a brief panic in the early weeks of the war, food supply ceased to be regarded as a serious problem, and did not for a considerable time become an acute pre-occupation. Men's minds were occupied by more obvious matters—the anxieties of the early months of war, with their hairbreadth escapes and their perpetual menace of invasion, the marshalling of the Territorial Force, the miraculous creation of the new army, the vast industrial problems of shipbuilding and the supply of munitions.

Prices, indeed, rising generally and steadily,[1] were a clear indication of growing shortage; but they became the occasion

[1] Appendix I., Tables VI., VII., VIII., IX., X., XI., pp. 51-54.

rather of some natural irritation against producers and merchants than of any serious consideration of the larger problem of which they were the symptoms.

Later events were to bring the agriculture of Britain into the orbit of the war. The producers of home-grown food were to be numbered among the national forces in the great contest. Endurance and victory were to depend on an unprecedented effort to make the land serve its true purpose. But all this was unperceived at first; and it was not until the summer of 1915, when the war had been in progress for nearly a year, that the Government bestirred itself in the matter of food production. Its first step was to appoint Committees of Inquiry for England, Scotland, and Ireland.

The Scottish Departmental Committee.

In the appointment of the Scottish Committee, "His Majesty's Secretary for Scotland, on 23rd June 1915, appointed the Right Honourable Eugene Wason, M.P.; Charles Douglas, Esq., D.Sc.; Joseph F. Duncan, Esq.; J. M. Hannah, Esq.; Harry Hope, Esq., M.P.; Professor Somerville, D.Sc.; David Wilson, Esq., D.Sc., and Sir Robert P. Wright, to be a Committee to consider and report what steps should be taken, by legislation or otherwise, for the sole purpose of maintaining, and if possible increasing, the present production of food in Scotland, on the assumption that the war may be prolonged beyond the harvest of 1916. He also appointed the Right Honourable Eugene Wason to be Chairman, and W. Barber, Esq., of the Board of Agriculture for Scotland, to be Secretary to the Committee."[1] The recommendations of the Committee, in its first report, were directed to the general increase of all forms of production and the avoidance of waste in farming. They dealt with the retention in the country, and the increased use, of artificial manures, the publication by the Board of Agriculture of information about values and prices of manures and feeding-stuffs, the extension of cropping, the encouragement of the use of seed grain of improved varieties, the promotion of trials and demonstrations of motor-ploughing, provision of allotments, development of Agricultural Co-operation, conservation of liquid manure, of straw, and of breeding animals, prevention of waste arising through excessive preservation of game, and the fullest possible productive utilisation of land devoted to purposes of sport and pleasure. The Committee pointed out "that any attempt to increase or even maintain the food production

[1] Report of the Departmental Committee on Production of Food in Scotland, 1915.

of the country would be made impossible by a further withdrawal from agriculture of experienced workers."

In order to stimulate production and give effect to their recommendations, they advocated the creation of District Agricultural Committees. They added to their report a Note: "The Departmental Committee, in making these recommendations, have not suggested legislation or compulsion of any kind, but they do not disregard the possibility that circumstances might arise in which it would be necessary to recommend Parliament to pass legislation dealing with some of the matters above mentioned." They recommended that they should be continued in office in order that they might, if necessary, make further proposals.

In abstaining from all recommendations requiring legislative compulsion, the Committee were not wholly agreed. Some of their number recommended that all farmers should be required (subject to an appeal to a local committee) "to plough up and put under a crop, other than grass and clover, twice as much as they similarly dealt with in 1914-15"; but this proposal was rejected by the majority on the ground that "it would penalise those who had cultivated their land most fully, and press least upon those who had probably most land proper to be broken up." One member recommended the creation in each district of a triumvirate empowered to order the ploughing up of land which had lain more than one year in grass; but it did not appear to the majority that this method could be adopted with advantage, or that the machinery necessary for its efficient administration could be elaborated in time to take effect in the ploughing season of 1915-16. They were content accordingly to appeal for voluntary effort, and, in summing up their general view of the situation, to say that "they believe that the prospects of a good return for efforts and expenditures are sufficient to induce farmers to increase their production; they point out that present and prospective grain prices afford to farmers an exceptional opportunity of breaking up grass lands which are in need of renewal by a course of cropping; and they rely with confidence on the good sense and patriotism of the agricultural community." Their reliance on voluntary effort was not unjustified. A growing sense of the national need, stimulated by an active campaign, which was initiated by the then Secretary for Scotland, and carried on chiefly by Mr W. Barber, who, as an official of the Board of Agriculture, acted as Secretary to the Committee, made itself felt in a substantial increase of tillage, which, in spite of accumulating difficulties, was made possible by a steady rise in grain prices. Whether the recommendations of the Committee were at this stage adequate, or whether a better result would have been secured by the

adoption of compulsory methods in the winter of 1915-16, is a question which hardly admits of a well-founded answer. It is certain that the Committee's decision represented at that time the general opinion both of agriculturists and of the public. The urgent need which at a later stage led to the adoption of compulsory methods had not so far arisen; and there was no general or well-grounded apprehension that it would arise. Increased production was regarded as important, but not as being so vital as to justify a violent interference with the normal procedure of farmers in accordance with economic conditions. The Committee no doubt shared the general opinion on the subject. They were led to understand that the submarine menace, which had not so far become serious, was well in hand; and they were informed by a very important witness, with unsurpassed first-hand knowledge of the provision trade in its widest scope, that "we have got to the crest of the wave in the price of food produce. I believe we shall not have as dear food next winter as we had last winter."[1] It is possible that, in a more anxious mood, the Committee might have recommended more drastic measures. At a later stage these were to be adopted, and the Committee itself was to devise the methods of their application; but whether, at this stage, their adoption would have resulted in larger cultivation than actually took place in 1915-16 can only be a matter of conjecture. The extent of the influence of such measures must always be determined by the stringency with which they are applied; and this, in turn, depends on the view which the administering bodies take of the urgency of the problem of production. It is at least doubtful whether such committees as carried out the measures of the following year would, in the autumn of 1915, have felt themselves justified in exacting a greater amount of additional tillage than actually took place, or in compelling the cultivation of land whose occupiers did not believe that it would repay cultivation. It is a fact not without relevance that when compulsory powers were actually conferred on the Board of Agriculture, they were rarely called into operation. They remained, no doubt, as an ultimate resort, and the fact of their existence sometimes stimulated voluntary action; but, so far as Scotland was concerned, they were invoked rather to secure equality as between the willing and the reluctant cultivator, and to deal with rare cases of refusal to comply with reasonable requests, than to determine the general extent of cultivation. They were seldom used, and the amount of cultivation directly affected by them was negligible.

[1] Minutes of Evidence taken before the Departmental Committee, &c., 1915. Answer 2953, Mr Thomas Clement.

On another subject also the Committee gave advice which, though followed at the time, was at a later stage to be set aside by the development of events and the growth of opinion. Several witnesses suggested a State guarantee of wheat prices as a method of increasing production. The Committee, however, did not recommend this. They were impressed by the administrative difficulties of the course proposed—difficulties which are now a matter no longer of conjecture but of experience,—and they pointed out "the risk that any guarantee of a high price might lead to the cultivation of wheat on land which would make a better contribution to the national needs if it were used in some other way for the production of food," and that "the contribution which Scotland can advantageously make to the wheat supply of the country is comparatively slight, and is of much less importance than is the degree in which it can furnish meat and dairy produce." They further uttered a warning "that the fixing of a minimum price for the protection of the producer against loss might entail a maximum price to restrict his profits."

In these views the Committee were unanimous. But the majority were of opinion that, in the event of compulsion to cultivate being instituted, some guarantee against loss would be required if confidence were to be maintained.

At a later stage (in December 1916) the Committee were invited to meet again by Mr Munro, who had recently become Secretary for Scotland; and at this time Sir Matthew Wallace was added to their number. The object of this fresh invitation was that the Committee should proceed—

(1) To consider and report, at the earliest possible moment, what steps should, in view of existing national requirements, be taken for the purpose of maintaining and, if possible, increasing the present production of food in Scotland; and

(2) To act in an advisory capacity in regard to any matters affecting food supplies which may be referred to them by the Board of Agriculture for Scotland.

The situation with regard to food supplies had now become very serious, and its vital character had been realised by the general public and by some, at all events, of the members of the Government. When the Committee met, in the last days of 1916, it had already been decided to confer powers of compulsion on the Board of Agriculture under the Defence of the Realm Act. The Committee, therefore, had no occasion to review their former decision with regard to this question, and addressed themselves only to the consideration of how this, with other methods of action, should be used for the increase of production.

They recommended that an effective organisation should be

based on the somewhat loosely formed Agricultural Committees, to which their first report had given rise — this organisation consisting of a small Executive Committee for each Local Government District, with an executive officer for each committee. The primary function of these committees was to report to the Board of Agriculture what additional areas on each farm could be brought under cultivation, what additional labour was required, and what artificial manures should be applied.

They once more urged the vital character which the problem of farm labour had now assumed, and recommended that no man at present working on a farm should be called up for examination or for military service without the sanction of the Board of Agriculture for Scotland.

They further recommended that the Board of Agriculture should give facilities for the training of women in agriculture, and should help to supply labour-saving implements and agricultural machinery, especially tractors.

They returned to the subject of damage by rabbits and deer, and recommended that occupiers of land should be allowed to kill trespassing deer, and that farmers should be permitted, without any obstacle, to kill rabbits on their holdings or in adjoining woods.

They advised that the export of artificial manures should be prevented; and they called attention to the scarcity of feeding-stuffs, which had now become a serious menace to production.

They warned the Government that the milk supply was gravely imperilled, and that a disastrous scarcity might result if the now restricted price of milk were not kept in relation to the cost of labour and feeding-stuffs.

The Agricultural Policy Sub-Committee of the Committee on Reconstruction.

Meantime a further inquiry was instituted, whose investigations were to exercise an influence on the agricultural policy of the war.

In August 1916, Mr Asquith appointed an Agricultural Policy Sub-Committee of the Reconstruction Committee, with the terms of reference: "Having regard to the need of increasing home-grown food supplies in the interest of national security, to examine and report upon the methods of effecting such increase." This Committee, generally called the Selborne Committee, was composed as follows:—

The Right Hon. the Earl of Selborne, K.G., G.C.M.G. (Chairman); Sir Charles Bathurst, K.B.E., M.P.; Mr C. M. Douglas, C.B., D.Sc.; the Right Hon. Sir Ailwyn Fellowes, K.C.V.O.;

Mr W. J. Fitzhubert Brockholes, C.B.E.; Sir Daniel Hall, K.C.B., F.R.S.; Mr W. A. Haviland; Mr C. Reyner Jones, M.Sc.; the Right Hon. R. C. Prothero, M.V.O., M.P.; Mr G. G. Rea, C.B.E.; the Right Hon. G. H. Roberts, M.P.; the Hon. E. G. Strutt; Sir Matthew Wallace. Three months later the Most Rev. Dr Kelly, Lord Bishop of Ross, and the Right Hon. Sir Horace Plunkett, K.C.V.O., F.R.S., were added to the Committee.

The original object of appointing this Committee, as its title and terms of reference indicate, was not to advise measures to aid in carrying on the war, but to develop a policy fitted to increase, during times of peace, the production of food which experience had now proved to be essential to the national stability and powers of resistance in any future war; and if the position of the Committee had in this respect remained unaltered, it is doubtful whether any considerable reference to it would have formed a proper part of the present narrative. But while the Committee, during the two years in which it deliberated, produced a report perhaps more comprehensive in its treatment of the problems of agriculture and rural life than any which had preceded it, certain of its recommendations exercised so definite an effect on policy during the war that they cannot be omitted from consideration here.

The Committee was compelled, at a very early period of its deliberations, to take note of the very serious failure of British agriculture in certain respects, which were vitally important from the point of view of national security.

A recent Parliamentary Paper (Cd 8305 of 1916, "The Recent Development of German Agriculture," by Mr T. H. Middleton, C.B.) had brought into startling relief the extent to which, during a period of over forty years, the trend of British agriculture, its gradual transformation from an intensive arable system to a pastoral use of land, had diminished its productive capacity; and this had been dramatically represented in sharp contrast with the much higher efficiency in this respect of our chief antagonist.

Among the most conspicuous and convincing of Mr Middleton's impressive statements were the following:—

"On each hundred acres of cultivated land

1. The British farmer feeds from 45 to 50 persons; the German farmer feeds from 70 to 75 persons.
2. The British farmer grows 15 tons of corn; the German farmer grows 33 tons.
3. The British farmer grows 11 tons of potatoes; the German farmer grows 55 tons.

4. The British farmer produces 4 tons of meat;
   the German farmer produces $4\frac{1}{4}$ tons.
5. The British farmer produces $17\frac{1}{2}$ tons of milk;
   the German farmer produces 28 tons.
6. The British farmer produces a negligible quantity of sugar;
   the German farmer produces $2\frac{3}{4}$ tons."

These figures were accompanied by the statement, which has not I think been disputed, "that the British farmer is much the more favoured by nature, and the view of leading German agriculturists is that their soils and climate are distinctly inferior to those of Britain."

These statements, emphasised as they increasingly were by the growing insistence of food problems as war went on, made it clear, even to many persons not usually interested in agriculture, that it was an essential object of national policy to reverse the process by which British farming had drifted from a more productive to a less productive use of land, and to restore cultivation to its former and proper place in the economy of agriculture.

But long before the pressure of events had come to influence public opinion generally, it had become apparent to the Committee that the process of agricultural degeneration had reached the level of a national danger. They had recognised, as some of them, at all events, had already been prepared to do, that the process of transforming agriculture from cultivation to grazing is not merely an alteration of its product, but a diminution of its productive power—that even if its aim were to produce only meat and milk rather than corn, the plough must still be its essential tool, and a reduced cultivation must mean a less result in food.

But while the Committee concerned itself, in accordance with its terms of reference, primarily and directly with food-production, a special aspect of agricultural depression claimed very definite consideration. The gradual abandonment of cultivation, combined with other causes, had come to exercise an influence, disastrous in its cumulative result, upon the standard of life of the rural population. The demand for their labour had naturally become less as the area of cultivation diminished; and this had made it possible to ignore both the steady drift of many—and these often the best—of the young men into other occupations, and also the progressive failure of their general standard of living to keep pace with the development of the rewards and ways of living of those engaged in more successful industries. Now the absence of a strong and well-

paid population on the land represents of course, in itself, a failure of agriculture to discharge one of its essential functions, since the nation cannot maintain itself in health and life if the rural population ceases to be adequate. But while such considerations might possibly, despite their importance, have lain outside the direct scope of the Committee, if this were narrowly conceived, the general question of the position of the farm-workers could not be omitted from its survey, even by the strictest and most pedantic limitation of its terms of reference. For the rural population is not merely one of many conditions affecting agricultural production — such as improvement in stock or crops, or the better encouragement of farming enterprise. It is the *crux* of the whole matter. If the welfare and energy of the agricultural workers be maintained, the industry will prosper, and its production will be maintained somehow, and in a degree proportionate to improvements of method and material. In the absence of this essential condition nothing can go well.

Both in respect of reduced cultivation and in relation to the welfare of the agricultural workers, Scotland had suffered in a less degree than England. The reduction in the area of corn and green crop in England between 1870 and 1914 was more than 25 per cent of the whole, while in Scotland during the same period it was less than 15 per cent;[1] and agricultural wages and conditions of life had never, in Scotland, reached so low a level as obtained in many English counties. Yet in Scotland also, though in a less degree than in England, it was found that even the improvement which was evident during recent years had done little to restore the industry to the vigour, or to give the farm workers the encouragement, which the national interest required.

In their consideration of this state of matters the members of the Committee, with the exception of Sir Matthew Wallace, were led to adopt certain definite conclusions.

They found, in the first place, that a condition had arisen such as to demand the intervention of the State—that "it must be explained to landowners, farmers, and agricultural labourers alike that the experience of this war has shown that the methods and results of land management and of farming are matters involving the safety of the State, and are not of concern only to the interests of individuals. They must be plainly told that the security and welfare of the State demand that the agricultural land of the country must gradually be made to yield its maximum production both in foodstuffs and in timber."[2]

[1] Appendix I., Table XVII., p. 60.

[2] Report of the Agricultural Policy Sub-Committee of the Reconstruction Committee, Part I., January 1917, Paragraph 17.

They further found that even what might properly, from the point of view of those who practised it, be regarded as good farming, was not necessarily good from the point of view of the State; that while individuals might in certain circumstances find it financially advantageous and safe to use land in such a way as to derive from it much less than it was capable of producing, such a policy was not one which the State could tolerate on a large scale. They had, in point of fact, before them the object-lesson which gave reality to such a conception—the manner in which farmers had learned to adapt their methods to the exigencies of the times, and had found in a much less productive use of land an escape from the risks which in the period of depression had overwhelmed so many of their number.

It appeared to them that, while a general stimulation of the industry through technical and educational improvements must gradually raise it to its maximum efficiency, the full productive result of these improvements could only be hoped for if producers were in some way secured against the calamitous incidence of such low prices as had once already had ruinous effect over a period of years. They recommended that, coupled with a policy of firm and well-considered insistence upon adequate production as a condition of the occupancy or the effective ownership of land, there should be a guarantee by the State that prices to the producer should not fall below certain levels for wheat and oats respectively. They laid it down as an inseparable part of this policy that minimum rates of wages should be secured to agricultural workers, and they suggested machinery for this purpose.

It may be well to deal shortly with one or two popular misconceptions regarding the recommendations above indicated—misconceptions partly, at all events, due to the fact that the Report has enjoyed more currency in hearsay than first-hand perusal. The Report has, to begin with, been represented as prescribing an attempt to render Great Britain, in ordinary times, self-supporting in respect of cereals. Such a view finds no place, however, in the Report of the Committee, and it is even, by implication at all events, repudiated. He would indeed, in view of our vast industrial population, be a peculiarly reckless statesman who would rely for the entire food supply of Britain in normal times upon the harvests of so fickle a climate as ours. What the Committee recommended was something quite different. They had seen not merely that the actual productiveness of our home agriculture was—as indeed it was known to be—adequate only for the supply of food for a few weeks in each year. They had seen, further, that its capacity for production was as much diminished as its actual yield, and that the restoration of this capacity was a long and difficult

process, for which a future war might give no margin of time. They therefore argued that it was essential to bring about such a permanent increase of cultivation as would place the country in possession of an equipment capable, in the emergency of war, through the selection of the most productive crops, of greatly and rapidly expanding the home contribution to the national larder—that the normal scale of the industry of cultivation should ensure the presence in the country of a much larger proportion of the implements, the horses, and the men necessary, on the shortest notice possible, to secure the maximum supply of food.

The same misconception underlies the criticism that the guarantee recommended applied only to cereal crops and not also to meat and milk. This is a criticism which would be entirely justified if the object of the Committee had been either to make the country independent of all foreign supplies at all times, or if it had been, as some critics have suggested, an attempt to endow producers at the expense of the State. But it is a criticism which ignores, without gainsaying, the theory of the Report, that the productiveness of the land in meat or milk is increased by cultivation, and that the chief necessity is to have such an industry of food production as can be rapidly expanded to an adequate extent.

Finally, there is the criticism that, of the cultivated crops, wheat and oats only are guaranteed in price, while the whole green crop—especially the potato crop—remains unregarded.

The answer is so simple that it is difficult to understand how it can have escaped the attention of any well-informed critic. The green crops are indeed the foundation, agriculturally, of all cultivation. But economically the price of grain is, speaking generally, the financial pivot of the rotation. It is the price of grain that determines cultivation; it is the price of grain which is exposed to unforeseen competition; it was the influence of such competition on the price of grain which spread ruin through the arable farms; it is security as to the price of grain which alone can give confidence to the farmer and stability to the industry.

Such is the theory underlying that policy of guaranteed grain prices which appeared to the Selborne Committee to be the essential condition of greatly increased production; but it was never intended that that policy should stand by itself, and it was not the desire of the Committee to make any of its recommendations public until its whole report should be ready.

The early days of 1917, however, were days when events marched quickly. Mr Lloyd George had recently become Prime Minister; food problems had come to rise largely and rapidly on the national horizon; and a request which could

not be ignored compelled the presentation of Part I. of the Report, which in its essential principles became the basis of the Corn Production Act of 1917.

The recommendation of a guaranteed price for cereals by the Selborne Committee may appear to be in opposition to the refusal of the Wason Committee to recommend a somewhat similar measure. In point of fact, however, the two Committees were concerned with separate problems: the Wason Committee was appointed to deal with policy during the continuance of the war; the Selborne Committee's reference was restricted to post-war problems. It is at least conceivable that a policy suited for conditions following the war might be without effect as an emergency measure.

In point of fact, however, Part I. of the Selborne Committee's Report did not, as has just been indicated, give rise, primarily at least, to a reconstruction policy, but to immediate legislation intended to contribute to the prosecution of the war. The Corn Production Act and the speeches which advocated it were Mr Lloyd George's rendering of the Committee's findings. It is, of course, matter of mere conjecture how far the Corn Production Act has influenced agricultural activity; for the scale of prices which it guarantees has been so much below the actual market prices that it has neither cost the country nor given the producer anything at all. It has not given even security, since the prices which it offers, when taken together with the increase of wages which it has stimulated, and with other costs of production, would have involved corn-growers in serious loss.

On the other hand, the speeches of Mr Lloyd George, and the new zeal for agriculture which became general in a time of acute anxiety, did undoubtedly tend to stimulate production.

The Board of Agriculture for Scotland.

Such crises in the industry of agriculture as inevitably resulted from the war were tests not only of the industry itself and of those who were directly engaged in it, but also, and certainly not in a less degree, of the departments of State concerned with agricultural administration.

Of these, the Board of Agriculture for Scotland was the youngest and the least mature; for, at the time of the outbreak of war, it had been in existence for little more than two years. It must be added also that controversies which had preceded and attended its formation were still fresh in the public mind, and that it had, in its earlier period, been perhaps too exclusively occupied with the formation and encouragement of small holdings, or at all events that its work in that connection had attracted more attention than its other operations. Its relations

to the agricultural community as a whole were no doubt in some degree impaired by its activities in the administration of the Land Settlement clauses of the Small Landholders Act, whose failure is now generally recognised. The influence of the Board was seriously prejudiced by this state of matters; and, even if this had not been the case, it was not, during the first year of war, more aware than other responsible authorities of the part which food production was to play in the critical times which followed. No better evidence of this is needed than the fact that one of its most important members was allowed to go abroad on military service in a comparatively subordinate capacity.

Upon the Board, so situated, was cast the burden of a great constructive effort to increase food production. At the same time, it was charged with the task of representing the needs of the farms in respect of labour against the increasingly insistent demands of the Army. Finally, it became the official representative—and for a considerable time the only representative—of the special circumstances and points of view of Scottish producers, in that long series of discussions which resulted from and conditioned the fixing of prices by the Ministry of Food.

The Increase of Cultivation.

In the first of these duties, the Board must be recognised to have attained a very large measure of success. The increase of cultivation which was obtained was no doubt rendered possible only by the rise in prices which came about through natural economic causes. But it was also actively stimulated by the work of the Committees which the Board created throughout the country, and whose operations it continued to develop. No mere rise in grain prices would have brought about the increase of the acreage under corn crops in Scotland, from 1,235,184 in 1916 to 1,494,414 in 1918,[1] or over 21 per cent in two years, during which labour scarcity was acute, and great difficulty was found in procuring the necessary artificial manures. No doubt the belief that prices would be maintained rendered possible expenditures on cultivation which could not otherwise have been made; but the driving-power in this successful effort was the farmers' belief that they had a part to play in the war, and a duty to the nation; and this belief was sedulously urged by the Board and fostered by the work of the Agricultural Executive Committees which created and stimulated an agricultural public opinion that made individual producers more aware of their responsibility.

The Agricultural Executive Committees were the agents of

[1] Appendix I., Table I., p. 46.

the Board throughout the country. Differently composed in different districts, they varied also in the methods which they adopted, and in the efficiency with which they discharged the tasks imposed on them. They were called on to advise in many matters—the granting of licences to sell horses, the issue of permits to obtain petrol, the certification of farm-workers for exemption from military service, and generally the application to agriculture of that whole series of compulsions which became necessary in order to concentrate all the material and moral resources of the nation upon the tasks of victory. Their duties were often invidious, often difficult, almost always thankless. They bore the reproach of many errors—some real and some imaginary—for which they had no responsibility. They were called on to administer unpopular regulations, and to explain often inexplicable decisions. In this somewhat bewildering situation, they had it for their chief business to stimulate the increase of production, and especially to bring about an extension of cropping, at the precise moment when this had become most difficult. It was a task which might well have seemed impossible; but everywhere it was faced and everywhere in some degree achieved, sometimes with much and sometimes with little resort to threats of compulsion, sometimes with the approval and sometimes under the criticism of the neighbourhoods. The success which was attained is the best vindication of the work of the committees as a whole; but it must be added that, even when they were most criticised they received generally the loyal support of agricultural producers—proprietors and tenants alike—and that there was a strong disposition, even when the wisdom of their acts was questioned, to comply with their decisions.

It is significant of this, that compulsion to cultivate, as has already been said, was of rare occurrence. The power of compulsion was retained, in Scotland, in the hands of the Board of Agriculture, and not vested, as in England, in the Executive Committees; and no doubt there were cases in which compulsion, recommended by committees, and sometimes rightly recommended, was refused by the Board, as well as cases in which the refusal of the Board to issue a compulsory order was justified. But, on the whole, compulsion was rarely recommended, because the committees obtained generally, without resorting to it, the cultivation which they thought desirable.

It has been a criticism, both of the Board and of Executive Committees, that too much effort was directed to the cultivation of additional land, and too little to the better cultivation of that already under crop. The criticism is no doubt just in certain instances. It is undoubtedly one which must be carefully regarded in any attempt to secure a permanent increase

of production. But it is doubtful whether on the whole it applies to the emergency measures of 1917 and 1918. Manures were scarce. Additional cultivation is more easily enforced than additional manuring, the merits of which may easily be misjudged by a tribunal unacquainted with the precise conditions of an individual farm. In any case, additional manuring and additional cultivation are not mutually exclusive.

In one special direction acute difficulty arose. The breaking up of grass-land, ordinarily used for accommodation purposes, together with the ploughing of more grass on the farms, led to an excessive demand for grazing—especially for young stock in the dairying districts. It was foreseen that this would result in very exaggerated rents, and action was thought necessary; indeed, unless some assurance on this subject had been given to dairy and stock farmers, they could not have accomplished the additional ploughing required of them. But the restriction of grass rents and the allocation of grazings proved to be no easy tasks. In some districts committees used their powers actively — allocated the grazings on definite schemes, found grazings outside their own areas, and generally secured the interests of those who had cultivated at their instance. In other districts no action was taken; rents rose to an unprecedented extent, and great hardships occurred. The Board was severely criticised, and it does not appear—at all events in the earlier stages—adequately to have recognised either the importance or the difficulty of the matter. It is not easy to determine how far its administrative difficulties were aggravated by uncertainty as to the interpretation of the Defence of the Realm Regulations under which it acted.

In their general effort to promote increased cultivation Executive Committees received the full support of the Board. They were adequately provided with secretaries and executive officers having the necessary qualifications for their duties. They were equipped with tractors, horses, and ploughs; and while the former did not, speaking generally, yield the results obtained in some parts of England, and while the difficult administration of their work no doubt left much to be desired, they did on the whole contribute substantially to the increase of cultivation.

Labour.

The shortage of labour, which in the end became general and led to the creation of a Ministry of National Service, was acutely felt in agriculture before it had seriously affected other industries; and it continued cumulatively to impede agricultural production, even at a time when the urgency of this had come to be recognised on all hands.

In the first place, the country districts contained on the whole no surplus of useful labour. The farms generally were not over-staffed at the outbreak of the war, which had been preceded by a period of very active emigration from the rural districts to Canada and elsewhere.

Further, a great expansion of agricultural production became necessary, while some other industries were restricted by the loss of their export trade and the consequent diminution of their power to employ labour. The demand for munition workers, and the extravagant wages paid to them, also made heavy inroads upon agricultural labour in certain districts. The situation was aggravated by the fact that the men desired by the recruiting authorities were generally those afterwards described as the "key" men—the young horsemen essential on arable farms, and the byremen on the dairy farms.

After the passing of the Military Service Act, acute controversy arose as to the rival claims of the farms and the Army. The military authorities were quick to suspect that farming exigencies were made a cloak to shelter members of a farmer's family from the dangers of war; and this suspicion was no doubt in some cases justified. It was further complained that farmers were slow and unwilling to use substituted labour, and traded upon the essential character of their business to exempt themselves from inconveniences to which all other employers were compelled to submit. This charge was sometimes well founded; and farmers were often unprepared to make any adequate attempt to utilise or to train men not already habituated to farm work. They were sometimes also unwilling to pay wages for work hitherto done by their families. On the other hand, the Army authorities were by no means careful in their selection of men to act as substitutes for skilled farm-workers; and they failed to appreciate the domestic circumstances which made it often difficult, and sometimes impossible — especially on the smaller farms — to accommodate men who were not members of the farmers' families.

It was in these circumstances that the Board had to undertake the difficult duty of adjudicating between the recognised needs of the Army and the legitimate claims of agriculture.

It cannot be said that this task was always successfully discharged; and considerable dissatisfaction was sometimes created by the refusal of the Board to accept the considered representations of Executive Committees. If it were necessary, as it may well have been, occasionally to overrule the decisions of committees likely, from their composition, to be unduly sympathetic to the agricultural point of view, greater

authority would have been given to the final decisions if they had emanated from men of recognised position and acquaintance with practical agriculture; and this was not always the case. There was perhaps no department of the work of the Board during the war which was regarded, in certain parts of the country, with less favour than its intervention in the matter of labour. On the other hand, there was certainly none which was in itself more difficult or less capable of being done in such a way as to satisfy all concerned.

The Board and the Food Ministry.

A task hardly less difficult was that, belonging to the last two years of the war, of representing the legitimate interests and point of view of the producers, and securing conditions reasonably favourable to production, in the complicated discussions with the Food Ministry, which were inseparable from the attempt to regulate the prices and conditions of sale of the whole range of agricultural products. There existed nowhere any coherent body of information—it may be questioned whether any even now exists—to serve as a proper basis for assessing costs of production. The conditions of production were so various as to make it all but impossible to devise methods of administration, calculated to be of general application, without creating the extremest difficulty and inconvenience in many cases. Especially was it difficult to adjust to Scottish circumstances and methods regulations which were apt, in the first instance, to be framed to meet the case of England only; and it may be assumed as certain that the Board was often overruled in its attempt to do this. On the other hand, it certainly did in some instances succeed in obtaining reasonable concessions to meet the needs of Scottish producers. It will not be disputed that it was vigilant and diligent in its care for Scottish interests, and in the difficult attempt to reconcile the urgent claims of the Food Ministry, acting under the constant pressure of irritated consumers, with the maintenance of conditions reasonably favourable to that encouragement of production which was the special responsibility of agricultural administrators and the greatest national interest involved in the discussion.

To say that the Board was sometimes mistaken is only to say that it consisted of human beings engaged in a task of unexampled difficulty. But perhaps in no part of its activities did it attain greater success or attract greater confidence than in this very difficult affair.

Administration and Consultation.

Two errors in general policy detracted somewhat from the success of the Board's administration during the war. It relied too exclusively on its own officials; and it failed to establish or to utilise an Advisory Committee really representative of the producers with and through whom its work had to be done.

In respect of the first matter, the Board of Agriculture and Fisheries perhaps erred more dangerously in an opposite direction. It created a superfluity of departments and administrators difficult, as it appeared to those who saw the outward manifestations of their energy, either to unite in a consistent purpose, or to restrain within their appointed precincts. It did, however, succeed in making effective use of a large number of active and useful volunteers, who were capable of exercising a wide influence, and importing into its work considerable driving-power. The Scottish Board, on the contrary, remained in most of its administrative work a closed circle, and laid upon its own officials a large variety of duties and responsibilities not all of which they were equally capable of discharging. In the result, the responsible members of the Board were seriously overtasked; and the multiplicity of their duties was certainly an obstacle to the careful and prescient consideration of large problems of policy.

The necessity for systematic consultation with those directly engaged in agriculture had been recognised by the Secretary for Scotland, as has been indicated, in the end of 1916.

Up to this time the Board had indeed frequently taken counsel with individuals; but this had been done informally and without any definite understanding as to who should be consulted; and it had come to be generally recognised that this state of matters was unsatisfactory. It was in order to create the necessary machinery for more regular consultation that it was resolved, at a largely-attended public meeting of agriculturists, held in Glasgow in August 1916, to form a Scottish Council of Agriculture. The Council, which was formed soon afterwards, with the approval and support of the existing agricultural organisations and of the Board of Agriculture, was designed not to supersede but to unite the various bodies representing agricultural interests, and to focus their opinions on important subjects for the Board of Agriculture. It consisted of representatives chosen by the Highland and Agricultural Society, the Scottish Chamber of Agriculture, the National Farmers' Union of Scotland, the Scottish Farm Servants' Union, the Scottish Agricultural Organisation Society, and the Scottish Arboricultural Society. It was thus a very representative body, and

was generally regarded as well fitted for the discharge of the important function which it was designed to perform, and which the Board of Agriculture led its promoters to believe that it would be invited to undertake. Many subsequent difficulties would probably have been avoided if the expressed intention of consulting it had been regularly carried out. This, however, was never done. Within a very short time after its formation the Secretary for Scotland, as has been already narrated, laid the duty of acting as an advisory committee upon the Departmental Committee on Food Production; and this inevitably displaced the Council of Agriculture. It is not necessary to discuss the relative personal qualifications of the members of the two bodies, some of whom were common to both, for the duty which they were both intended to perform. It is sufficient to point out that the Council of Agriculture was, while the Departmental Committee was not, a representative body, and that it was thus calculated to attract the confidence of farmers as no merely nominated body can do in a democratic community. In point of fact, the Departmental Committee, as a whole, was quite unfitted to act as an advisory body. Its chairman and some of its members were habitually engaged and resident in England, and it contained only two tenant-farmers to represent the class whose interest in its proceedings was greater than that of any other. The idea of employing it for advisory purposes never materialised, and was soon abandoned in favour of the institution of an "Emergency Committee," consisting partly of selected members of the Departmental Committee and partly of other persons nominated by the Board of Agriculture. The necessity for a representative Committee, with which the Board of Agriculture should consult regularly, is now quite generally recognised, and plans have been formulated for the creation of such a body. It is impossible to doubt that, if the machinery for regular consultation with an authoritative and representative council had been systematically utilised, occasions of controversy would have been avoided, and the smooth and efficient administration of the Board would have been promoted.

It ought, however, to be recorded that, in the net result, the Board of Agriculture for Scotland has, in a period of unprecedented difficulty, on the whole improved its position in Scottish agricultural opinion, that its efforts achieved a substantial degree of success, combined with an economy in expenditure rare in a Government department, and that its opportunity of future usefulness is substantially greater now than it was in 1914—results which must be ascribed to the energy and zeal with which its members and officials, in spite of such errors and failures as no department of State has succeeded in escaping, addressed themselves throughout the war to their difficult and responsible task.

Forage Control.

The control of food supplies generally ruled the whole agricultural situation during the later phases of the war; but at an early stage it became necessary to commandeer the forage which was required for the use of the Army, and steps were taken for this purpose when the crop of 1915 was secured.

In the first instance, only that quantity of hay was controlled which was required for the needs of the Army, a quantity which naturally increased as the Army itself grew in numbers and required a correspondingly greater amount of horse transport. Administrative difficulties, however, led to the extension of the control, since the price fixed for hay taken for Army purposes was much less than that obtainable in the open market; and the discrepancy became rapidly greater as the amount required by the Army increased, and the resulting scarcity of supplies for civilian use became an additional element in a situation already made abnormal by the fact that the price of hay was fixed at a level relatively much lower than those to which all other feeding materials were rapidly rising. It became increasingly difficult for the Forage Department to secure the necessary hay from farmers when that which was not taken for the Army commanded easily a very much higher price than was allowed by the Army Council. Producers whose best hay was taken at a low price under compulsion viewed with natural resentment the sale of inferior hay by others at much higher prices.

A situation already increasingly difficult reached an acute crisis in the spring of 1916, when a late snowstorm, coinciding with a much-depleted supply of hay—the 1915 hay harvest having been unfavourable—raised the price to £12 and in some cases £14 per ton. It is not without interest to record that some sheep-farmers, who were afterwards to regard the policy of control with other eyes, became earnest advocates of the extension to all civilian supplies of the fixed prices at which hay was taken for the Army. In the end this step was taken; and the control of forage was gradually extended until, not only nominally but in actual effect, the Army Council came to administer its whole distribution alike to the Army and to civilian consumers. This state of matters endured until, in February 1919, the Forage Department, following a policy already adopted in England, created a Civil Supplies Council in Scotland to deal with all civilian supplies, and, having ceased to purchase for the Army, confined itself to taking over Army supplies already purchased.

The Forage Committee was created in 1915 by the Army Council as an advisory body to consider and recommend methods

of control and prices of forage; and the Forage Reference Committee for Scotland, itself advisory to this advisory body, was set up, rather, perhaps, to conciliate Scottish opinion and to facilitate Scottish purchases than with the intention that special Scottish conditions should be seriously taken into account. It is at all events certain that the occasions on which it was able to exert an influence in the latter direction were few indeed.

In the successive seasons of 1916, 1917, and 1918, a complete system was gradually evolved, regulating, with the utmost strictness, the prices to be obtained by the producer and the merchant respectively.[1]

It is not easy to ascertain on what basis the producer's price—by which dealers' prices were regulated—was settled from time to time. It was always a maximum price, and was intended to be paid only for the best hay, such as was taken for Army use. In point of fact it was so low, at all times, in comparison with that at which equivalent feeding material of other kinds could be procured, that it was very commonly obtained for inferior qualities of hay.

The Army Council never admitted the view that forage should be paid for in accordance with its actual feeding value. The price purported to bear some relation, never very well defined, to an assumed cost of production, the evidence for which was generally nebulous and sometimes contradictory. The maximum prices fixed were really a rough compromise between the demands—sometimes no doubt excessive—of the producers, and the urgent claim of the Army Council to be supplied at the cheapest possible rate. It cannot be said that this method—whatever its merits might be in relation to Army supplies—was calculated to encourage the sale of hay to civilians. The producer was allowed to retain for his own use such hay as he might require; but his surplus was taken at a restricted price, which bore no relation to the cost of an equivalent in oilcake or any other purchased material. It was inevitable, in such circumstances, that hay should often be consumed by the producer which, if the price allowed had corresponded with that of purchasable substitutes, would have been sold as surplus. It was no less inevitable that the production of "surplus" hay should be somewhat discouraged. In the result the prices fixed for hay did not adequately encourage production. The area under hay in Scotland fell from 581,246 acres in 1917 to 541,136 acres in 1918.[2] Similar results in England led to a somewhat anxious situation, in which it was found necessary to encourage the sale of hay by authorising the comparatively high price of £8 per ton, and to promote the consumption of oat straw by restricting the price to the low figure of £3, 15s.[3]

[1] Appendix II., *C.*, p. 63. [2] Appendix I., Table I., p. 46.
[3] Appendix II., *C.*, p. 63.

Food Control.

Food control had exercised national opinion for a considerable time before practical steps were taken to enforce it; and after it was instituted in 1917 it bulked more largely in the public mind than almost any other domestic problem of the war, because it touched more closely the personal and family life of the whole community.

It connected itself directly with agriculture only in certain of its aspects, and chiefly in so far as it consisted in interference with the prices and conditions of sale of certain agricultural products. It was therefore natural that in the earlier stages of their development food-control measures were devised without any consultation with the agricultural producer.

It became obvious, however, from an early stage of the administration, which first became effective on the appointment of Lord Rhondda to the Ministry of Food early in 1917, that the home producers would become deeply involved in the proceedings of the Ministry.

The very indefinite accusation of profiteering was naturally rife in a period in which high prices and scarcity were engendering a serious degree of industrial unrest; and it was to the high price of food, rather than to the scarcity which caused it, that attention was chiefly turned. The producer became, inevitably, the object of attacks, which were often no less inevitably unreasonable, because men and women are naturally unreasonable when they are hungry or otherwise uncomfortable; and it was only when restriction of prices was followed by the discomforts of the "queue" that scarcity revealed itself as the chief problem, and price-fixing was followed by the rationing which should have accompanied it from the first, as a substitute for the normal influence of price upon demand.

The restriction of prices appeared at first to be the only duty of the Food Controller, and it was natural that Lord Rhondda should begin his administrative work by assuring the irritated consumers of his good intentions towards them. In this proceeding, however—in declaring on every occasion his resolve to protect the consumers—he naturally roused the suspicion of the producers, and did rather less than justice to the perception, which he afterwards displayed, of the vital importance of encouraging production. It may be assumed that it was the necessity of reassuring exasperated consumers which led him to use expressions and arguments ill calculated to conciliate the support of producers, and that he was in the position in which politicians often find themselves—compelled to address to one section of his audience observations which it would have been better that another section did not overhear.

The Food Controller was inevitably placed in a position of great difficulty in relation to agricultural producers. As the consumers' champion he necessarily interfered with the interests and activities of producers, while he had at first no technical agricultural staff, and no recognised method of consulting agriculturists. Gradually these deficiencies were in some degree remedied; but meantime serious mistakes were made.

The most notorious of these was the wasteful slaughter of large numbers of immature cattle in the second half of 1917.

It was urged in vain that this proceeding must inevitably result in a serious ultimate reduction of the home-grown meat supply, that abundance of grass and the large increase of cultivation would enable production to be greatly increased by delaying the proposed slaughter, and that the difficulty of adjusting supply and demand would be better met—as was soon afterwards recognised in the introduction of the rationing system—by restricting civilian consumption than by speeding up the process of slaughter, to the detriment of subsequent supplies. The Food Ministry had recently subordinated all other considerations to the view that the fattening of cattle beyond a very low point was wasteful; and while the general truth of this proposition, in the circumstances of 1917, can hardly be disputed, the point at which economic loss in fattening begins was certainly, in practice, estimated too low; and a serious waste took place in consequence, through the compulsory slaughter of many immature animals, in opposition to the judgment of all who were practically conversant with the cattle-feeding industry.

Another serious instance of mismanagement arose in the case of potatoes.

An acute shortage of potatoes arose in the spring of 1917, through the comparative failure of the 1916 crop; and this, together with the growing seriousness of the food situation as a whole, led the Government to guarantee a scale of prices to potato-growers.[1]

No administrative arrangements, however, had been made to give effect to this guarantee; and, while it was never officially repudiated, the steps taken to fulfil it, in the face of an abundant potato harvest and a slow demand, were so ineffective that the guaranteed price was in many cases not received by the growers. The guarantee of price was given, apparently, with no expectation that circumstances would make necessary any administrative steps for its fulfilment; and no arrangement was made for dealing with the situation which actually arose. The area under potatoes on the farms was increased in Scotland from 130,119 acres in 1916 to 147,717 acres in 1917,[2]

[1] Appendix II., *B.*, p. 62.

[2] Appendix I., Table I., p. 46.

and in England and Wales from 427,948 acres in 1916 to 507,987 acres in 1917. This large increase in area was accompanied by an unusually heavy crop, and also by the creation everywhere of allotments, in town and country alike, which was brought about both by the scarcity of potatoes in the spring of 1917, and also by the anxiety as to future supplies and the sense of the vital character of the food problem which had now come to occupy the public mind. In the end the potato crop was not, as it was at one time believed to be, in excess of the national power of consumption; but it was met by a slow demand, resulting partly from the fact that the allotment-holders naturally consumed their home-grown potatoes before buying those grown on the farms. Potato-growers were alarmed by this slow demand and by the apparently excessive visible supplies. They were eager to sell, and naturally the more eager because no indication was given of any steps to be taken by the Food Ministry to implement the guarantee. Large quantities of potatoes were therefore sold at prices much lower than had been promised, and the winter was well advanced before anything was done to remedy what was regarded by many producers as a breach of faith. When measures were taken, they were in many cases too late to obviate this result; and they were not, even when adopted, adequate for the purpose which they were intended to serve.

"Base prices" were fixed for various parts of the country at which it was believed that potatoes could be sold; and the Ministry paid, on all proved sales, the differences between these prices and the guaranteed prices. The base prices, however, were not always obtained; and the general result was that, through failure to devise adequate administrative methods, the guaranteed price was not assured to producers, and was not always obtained by them.

It was perhaps not unnatural that there should have been difficulty in fulfilling, in respect of the 1917 crop, a promise made without any expectation of the circumstances in which its fulfilment would be required; but it is difficult to excuse the failure of the Food Ministry, in the light of its experience, to make adequate provision against a similar state of matters in respect of the crop of 1918. Its declared policy was to purchase, at a price to be fixed by a Commission, all sound ware potatoes of that crop in the pits in November, and to take delivery throughout the season; and this proposal was no doubt superficially clear; but it was never explained, in reply to many inquiries, how all the complex conditions of such a transaction were to be regulated, and in particular how it was proposed to assess so-called "abnormal"

wastage between November and the time when delivery of the potatoes should actually be taken. In England the resulting difficulties became acute. In Scotland they were avoided, in the end, by allowing the producer an additional sum of five shillings per ton in consideration of his relieving the Ministry of liability for loss from wastage. In England and Scotland alike the guarantee of price was not adequately supported by the provision of a market; and while this was no doubt partly due to the fortunate change in the food situation which was an immediate sequel to the Armistice, the Ministry cannot be said to have taken proper measures to fulfil its obligations. The guarantee of potato prices was, from the point of view of the national food supply, a well-conceived and effective policy; but it was unfortunate, throughout, in the manner of its administration.

The Central Agricultural Advisory Council.

It was probably a result of the administrative difficulties of 1917 that Lord Rhondda decided to form an Agricultural Advisory Committee, which, after certain informal conferences, met for the first time on May 3, 1918, and in which Scotland was represented by Mr Charles Douglas and Mr William Elliot, appointed by the Highland and Agricultural Society, Mr H. W. B. Crawford, appointed by the Chamber of Agriculture, and Mr William Donald, appointed by the National Farmers' Union. Some such advisory body was evidently necessary in view of the extent to which the conditions of agricultural production were liable to be affected by the food control, which now dealt with practically all essential supplies. It appeared, however, to supersede and interfere with the functions of the Boards of Agriculture; and in England, where the President of the Board of Agriculture and Fisheries had already created an Advisory Committee, it brought about the situation that two independent Committees were consulted by two Government departments on identical questions of policy. Such a state of matters could not, in the nature of the case, be permanent; and the fusion of the two Committees was completed in July, when the Central Agricultural Advisory Council, which combined them, met for the first time under the chairmanship of Lord Selborne. Additional representatives of Scotland were appointed at this stage—Mr James Elder by the Highland and Agricultural Society, Mr G. A. Ferguson by the Chamber of Agriculture, and Mr A. Batchelor by the Farmers' Union. At a later stage Mr George Mercer succeeded Mr Crawford as a member of the Council. Representatives of the Boards of Agriculture and the Irish Department of Agricul-

ture took part in the deliberations of this Council, though not in its decisions. The Board of Agriculture for Scotland was usually represented by Sir Robert Wright and Sir Robert Greig. The proceedings of the Council were naturally regarded as confidential; but it was generally known to give advice to all Government departments whose administrative work affected agricultural production, although it did not supersede the Forage Committee in the relations of that body with the Army Council.

No complete account can be attempted here of the vast assemblage of orders by which it became necessary to regulate the sale of food, or even of those which dealt with home-grown produce.

The Control of Prices.

The cereal crops were controlled in price from April 1917 for such part of the 1916 crop as remained unsold at that date, and for the whole of the crops of 1917 and 1918.[1] The potato crop had already been similarly controlled from January 1917.[2] The control of prices and conditions of sale of meat was developed in a series of orders from August 1917 onwards.[3] An elaborate system of grading was introduced in December 1917, under which no stock were permitted to be sold for slaughter except in recognised markets, and all sales were made at fixed prices for live weight, graduated according to the percentage of carcase weight estimated by graders representing respectively farmers and butchers. Alternatively producers were allowed to sell their stock by carcase weight ascertained after slaughter at recognised slaughter-houses; and the prices were so arranged as to encourage this method of disposal.

Milk prices were first controlled in November 1916 by an order which stipulated that they should bear a fixed relation to the levels at which they had formerly stood; but this method was found to be unworkable, and from September 1917 definite maximum prices were fixed for producers and definite maximum rates of profit and cost of sale and delivery were authorised.[4]

The price of cheese was regulated in some degree of correspondence with that of milk from the autumn of 1917 onwards.[5] At the same time the price of butter was restricted, and was kept throughout the war at a level below that of the corresponding quantities of milk, with the definite intention of discouraging butter-making in order to secure the supply of liquid milk, as to which considerable anxiety was now felt.[6]

[1] Appendix II., *A.*, p. 62.
[2] Appendix II., *B.*, pp. 62, 63.
[3] Appendix II., *D.*, p. 64.
[4] Appendix II., *G.*, pp. 65, 66.
[5] Appendix II., *H.*, p. 66.
[6] Appendix II., *I.*, p. 66.

With the same object the sale of cream was prohibited except for invalids and children, under medical certificate, and for manufacture into butter.

In December 1918 the rapidly rising price of eggs, which now became increasingly scarce owing to the difficulty of obtaining poultry food, led to the enactment of a maximum price.[1]

The process of adjusting the maximum prices of farm produce was one of great complexity, and it was not made easier by the fact that it was carried on under continuous pressure from two opposite directions. It was closely scanned on the one hand by the Consumers' Council, a body representing the interests of the consumer, and conceiving these interests somewhat narrowly as consisting almost exclusively in cheapening commodities. On the other hand, it was under perpetual criticism by producers, whose natural tendency was inevitably towards the maintenance of the prices, which appeared to them to be necessary in view of the constantly rising costs of production and the increasing risks and disadvantages to which farming operations were exposed through the scarcity of efficient labour and the difficulty of obtaining manures and feeding-stuffs. The efforts of the Food Ministry to base fixed prices on costs of production were met by the almost insuperable difficulty presented not merely by the fact that no reliable information on that subject was available, but also by the degree in which differences of soil, climate, and local conditions generally, vary the cost of production within very wide limits.

In no other case was this latter difficulty so evident as in that of milk production. The length of the grazing season—varying as it does by a hundred per cent in different regions of Britain—itself creates a hopeless discrepancy between such districts as Somerset or Devon and the uplands of Ayrshire or Lanarkshire. The efficiency and cost of dairy labour are probably almost as unequal. The feeding values of crops produced in different districts, and the relative costs of producing them, are further variable conditions.

To these must be added, even within each district, the widely differing productive capacities of different herds of cows and of individual cows in the same herd: there can be no standard cost of production equally applicable to a herd of cows averaging, say, 500 gallons of milk, and one averaging 800 gallons or 900 gallons, at hardly any greater cost of maintenance. Added to these inherent difficulties is the artificial variation created by the practice of producing milk at excessive costs in the town dairies, for which not only must all food be bought, but also all cows must be purchased at the beginning of their lactations, and sold to the butcher when they go dry.

[1] Appendix II., *J.*, p. 66.

The reasons for making a controlled price uniform are of course evident, when it is remembered that supplies of milk, produced in different districts and under most unequal conditions, are often sold in the same market. On the other hand, it is no less evident that uniformity of maximum price, unless it be at a very high level, renders unprofitable an amount of existing production which it is presumably desirable to maintain, and which will be lost, sooner or later, in proportion to the degree in which prices are restricted.

In such circumstances it is clear that advice from producers and advice from consumers can almost never agree; and when it is realised how laborious the industry of milk production inevitably is, and how easily it might sustain irreparable damage from an error in control, the problem must be recognised to be one of very great gravity as well as of almost insoluble difficulty. A Travelling Commission, instituted in December 1918 to investigate the cost of milk production in different parts of the country, made a report on the prices to be allowed in the months from May to September of 1919. It is an interesting coincidence that the prices which it recommended, on the basis of the costs which it ascertained—and which were identical for all parts of Scotland on one monthly scale, and for all parts of England, with two exceptions, on a slightly different monthly scale, amounting for the period to an identical total—correspond very nearly with the prices allowed during the same months of 1918. When the Commission explains the grounds of its finding, it will no doubt become apparent how the Ministry of Food was so fortunate, in 1918, as to arrive, without systematic investigation, at a result which such investigation has so nearly substantiated, and also by what happy concurrence of historical and economic circumstances the line at which differences occur in the relative costs of milk production in different months is exactly coincident with the Scottish Border.[1]

Milk prices furnish perhaps the extreme case of the difficulty of assessing costs of production which shall be of general application; but the difficulty is found in every case; and we still lack not only an authentic body of information on the subject, but even any systematic principles on which the differences in cost, which are inevitable, may be accurately discounted.

On the whole, it must be recognised that the Ministry of Food was not unsuccessful in arriving at such scales of prices as enabled production to be carried on, while protecting the consumer against excessive charges caused by scarcity.

[1] Appendix II., *G.* (pp. 65, 66), and Report of the Travelling Commission of Enquiry into the Cost of Production of Milk.

Producers, no doubt, viewed with natural dissatisfaction the arrangement by which, for example, grain merchants were able to purchase Scottish oats at prices much below those paid for inferior imported oats, and afterwards to sell Scottish and imported together at the higher price allowed for the latter. On the other hand, they did not find it unprofitable to produce oats at the permitted price. In the case of meat, there was a constant suspicion that the large costs incidental to the Ministry's disposal of home-fed live stock were augmented by purchases, at higher prices, in other markets; and this suspicion will no doubt persist until the publication of the Ministry's Live Stock Accounts, if that should ever take place; but what is really important is that, in spite of many errors, no doubt, and in spite of inconveniences, tolerable only as a trivial part, after all, of the incidents of war, the agricultural industry retained so large a degree of prosperity and of productive vitality, under a control which kept prices to the consumer below the levels to which they have risen in every other country.

Agricultural Organisations.

The Scottish organisations through which farmers maintain their interests were naturally active during the war. The Highland and Agricultural Society, which had not previously occupied itself largely in discussion with Government departments, found itself compelled to take action, in the difficult circumstances which war created for the industry for whose promotion the Society exists; and the Scottish Chamber of Agriculture and the National Farmers' Union of Scotland were even more active in making representations on various subjects. Joint action by the Societies became more frequent than it had previously been; and it cannot be said that any considerable agricultural interest or grievance remained unstated. Apart from representations regarding price and other orders, which became less frequent as producers became habituated to control, and especially after the formation of the Central Agricultural Advisory Council, the matter on which representations were made most strongly and most frequently was the repeated depletion of farm labour, and especially the apparently reckless way in which skilled men were called up for military service at times when it was impossible either to replace them or to dispense with their services for carrying out operations already entered on. The success of such representations was rarely complete, but it was on the whole sufficient both to show that the representations were justified, and to illustrate how useful combined action is in the assertion of agricultural interests.

The Highland and Agricultural Society, however, had other functions to discharge than these. Its annual show was necessarily in abeyance during the four years following the outbreak of war; but it continued, in other ways, its constructive work for the development of agriculture.

The articles published in the Society's 'Transactions' during this period dealt both with topics specially relevant to the stress of war and with the general development of agriculture which the war had shown to be necessary; and in 1917 an important Conference on the Improvement of Agriculture was held by the Society in Edinburgh. The subjects selected for discussion covered a wide field. In addition to a general discussion on Agricultural Policy initiated by Lord Selborne, they embraced various problems of Research, the Development of Education, the work of Local Agricultural Committees, the supply of Fertilisers and Feeding-stuffs, and the Use of Motor-tractors in Agriculture. The Conference was very largely attended, and the topics discussed at it proved to be those in which practical interest centred itself during the period immediately following it.[1]

The necessity for investigating the application of improved machinery to agriculture had already been recognised; and in 1916 an important investigation was made by the Society into the practical advantages and difficulties of the use of milking-machines. A valuable report on the subject was made by Mr William Burkitt, who conducted the inquiry under the guidance of a committee of the Directors.[2]

In 1915 an exhibition trial of Motor Tillage Implements was held by the Society at Stirling, and served a useful purpose by demonstrating the possibilities of mechanical power in its application to tillage, and by exciting public interest in the future development of its use.

Two years later, however, a much more valuable demonstration was held at the request and with the financial support (to the extent of almost half its cost) of the Board of Agriculture for Scotland. This demonstration took place, in October 1917, at three different centres near Edinburgh, Glasgow, and Perth. Its most evident result was to show the very great progress which had been made during the two years which had passed since the Stirling demonstration, although British manufacturers had been prevented by the exigencies of war from devoting to the subject the attention which they might, in other circumstances, have given to it. It was evident, on this occasion, that the tractor had become a real factor in the development of Scottish agriculture. A report on the trial, which was generally regarded as a useful discussion of the subject, was

[1] Transactions, vol. xxx. [2] Transactions, vol. xxix.

soon afterwards issued by the Society, and was subsequently published in the 'Transactions.'[1]

The value and importance of improved plant-breeding had long been recognised by intelligent and progressive farmers; and interest in this subject was quickened by an address on Cultural Problems for Research, delivered by Dr Russell, Director of Rothamsted Experimental Station, at the Society's Conference in 1917. The results obtained at the Swedish Institute at Svalöf also became increasingly known, particularly through the introduction of some of the varieties of oats produced there. In 1917 the Directors of the Society invited the Board of Agriculture for Scotland to establish—

(1) A station for the testing and registration of new varieties of agricultural seeds and plants, and

(2) A station for researeh in plant-breeding.

The Board agreed to proceed at once with the first of these projects; but it was not at that time thought practicable to make progress with the second.

A year later, however, the Directors again decided to take action, in the interests of Scottish agriculture, to bring about a concerted effort to promote scientific plant-breeding. They accordingly invited representatives of the Scottish Chamber of Agriculture, the National Farmers' Union of Scotland, and the Scottish Seed Trade Association to a Conference on the subject, at which they also invited the Board of Agriculture for Scotland to be represented. They further recommended the Society to give a grant of £2000 towards the realisation of the project. This grant was duly voted in July 1918; and at the same time the proposed Conference was held under the presidency of Mr Munro, the Secretary for Scotland. It was agreed to proceed to collect funds for the establishment of a Station for Research in Plant-breeding; and the Secretary for Scotland intimated his intention of sanctioning the expenditure, from public funds, of a sum equivalent to that procured from other sources. While the project received a very general support, it may be permitted to mention especially the liberal help given by seed traders, and the persistent advocacy of Mr James Elder.

Conditions of Production.

Farming was conducted during the war under conditions which were rendered abnormal by legislative and economic causes.

Some account has been given of the general restriction of prices which became necessary, partly in order to minimise excessive increases in the cost of living, and partly in response

[1] Transactions, vol. xxx.

to a conviction, which might well have had more equal effect, that individuals should not make an unrestricted profit out of the general calamity of war.

But in other respects also war brought interference by the State into regions in which it had no previous place.

The District Agricultural Executive Committees did indeed represent, to a certain extent, self-government by producers, since they were mainly composed of persons engaged in agriculture. But they did not create their own policy, which was determined for them by the general purpose which they were appointed to serve—the increase of cultivation required by the Government. Even when they exercised no actual compulsion, they were recognised to have authority; and the general sense of the countryside was that farming was under control, and must be carried on so as to secure the objects of the Government. The Defence of the Realm Act and its orders formed the background of agriculture throughout the later period of the war.

But it must not be assumed that all interference was inimical to the farmer. If his selling prices were restricted, his working costs were also in some degree controlled. His feeding-stuffs and manures were restricted in price as well as his milk and corn.[1]

The Corn Production Act, as it affects the farmer, was during the war inoperative in two of its main provisions. In the first place, it did nothing to increase the price of grain, since the prices guaranteed by it, for wheat and oats, were much lower than those actually obtained in the market. In the second place, it did not give the intended protection against increases of rent due to the guarantees, since the guarantees were never operative and therefore were not a cause of such few increases of rent as were actually made. On the other hand, the Act undoubtedly did stimulate the rise in agricultural wages which would in any case have taken place, and helped to set up a standard which it may be difficult to maintain if cereal prices should fall considerably, as they are generally expected to do in the near future, although it was warranted during the war both by the increase in the cost of living and by the profits of agriculture. The wages actually paid, however, were in almost all districts in excess of the minimum rates fixed under the procedure laid down by the Corn Production Act.

In point of fact the cost of labour was by no means the most serious preoccupation of the farmer in relation to it. If an adequate supply of efficient labour had been obtainable it could have been fully employed; but the shortage of labour, and the inferior efficiency of much of that which was provided,

[1] Appendix I., Tables XIV. and XV., p. 59.

constituted the most serious hindrance to production; and nowhere was the difficulty greater than in Scotland. There was not there the same possibility of utilising the additional labour of women which existed in England, since the services of women had always been much more generally employed in pre-war conditions, and the reserve of women's labour which was so largely used in England was therefore not available in Scotland. A further aggravation arose from the greater prevalence of small farms, since the loss of a proportion of the staff of a large farm creates a much less acute difficulty, especially at critical periods of the year, than the reduction of the already meagre personnel of a small one. Similarly in the case of fertilisers and feeding-stuffs it was not in their costs but in their growing scarcity that the producer found his greatest difficulty. So long as the price of his produce corresponded reasonably to the costs of his supplies, these costs did not seriously militate against his success. But the scarcity of some of the important manures—especially phosphates—was a serious hindrance to production; and the shortage of feeding-stuffs became in the later stages of the war a grave menace. It is indeed certain that, if the war had lasted through the winter and spring of 1919, the production of meat and milk would have been seriously crippled.

The five corn harvests of the war were very various in character. A rather early harvest in 1914 was followed by four late, slow, and difficult years. In 1915 no very serious losses were incurred; but in 1916 a harvest which was almost everywhere late and protracted resulted in serious loss, especially in the later districts; and in 1917 a harvest which, though late in beginning, was successful in some Eastern and Northern districts, was disastrous throughout the West Country as a whole. The harvest of 1918, beginning rather early in most districts, was also very irregular in its character. Crops were, on the whole, well secured in some districts; but almost continuous rains in the latter part of September and throughout October resulted in much loss, especially in all the western regions; and these losses were exceptionally heavy in some comparatively early districts. The oat crops during the period of the war were, on the whole, rather above, and those of wheat and barley rather below, the recent averages in quantity; but their quality was in many cases, in the later years, impaired by the difficult harvest periods which have been recorded above. The dry summer of 1918 resulted in a small yield of straw in certain districts. The losses of crop were seriously aggravated by labour shortage in 1917 and 1918.

The hay harvests of the war years were, on the whole, productive and successful, with the exception of that of 1915,

which was generally light, and was seriously injured — in certain districts entirely ruined—by adverse weather in July. Some hay was lost in south-western districts through bad weather conditions in 1917, and to a less extent in 1918. The hay crop of 1916 was exceptionally heavy and well secured.

The potato crop—so important during these years of difficulty—varied greatly in different seasons. Moderate crops in 1914 and 1915, considerably though unequally injured by disease, were followed by an exceptionally poor yield in 1916, when a cold and wet spring condemned the crop to comparative failure. This was specially memorable from its sharp contrast to the yield — unparalleled in recent times — of the crop of 1917, which, on a very wide acreage,[1] produced a supply beyond all anticipation.[2] The crop of 1918, though much inferior to its predecessor, was on the whole satisfactory, and its acreage was again much extended.

The turnip crops of 1914 were, on the whole, light, and were affected in many districts by disease and by insect pests. In 1915 a much heavier crop generally was reduced in its ultimate yield and value, in many cases, by a severe November frost. In the following year poor yields were almost universal, while in practically all parts of the country the crop of 1917 was of exceptional weight and quality. The crop of 1918, seriously damaged in many places by late spring frosts and unusual drought, was, on the whole, good in the West of Scotland.

Farming Results during the War.

In other respects, production was well maintained. It is a significant fact that the great increase which was made in the area of cultivated land did not diminish the numbers of live stock generally,[3] though in the case of pigs the numbers fell from 152,768 in 1914 to 127,615 in 1918—a result due chiefly to the difficulty of obtaining feeding-stuffs (especially wheat offals, rendered scarce by the milling arrangements, which greatly increased the extraction of flour), and partly also to the somewhat fluctuating and uncertain policy of the Ministry. The production of meat and milk was diminished also by the scarcity of imported cattle food as well as by the doubtfully profitable conditions of the cattle-feeding and dairying industries. But it may be suggested that the scarcity of milk, which constantly threatened to become acute, while partly due to difficulties in production, was also in some degree brought about by an active demand, resulting from the increased spending power of the great mass of consumers and

[1] Appendix I., Table I., p. 46. [2] Appendix I., Table IV., p. 49.
[3] Appendix I., Table II., p. 47.

from the relative cheapness of milk in comparison with other animal foods.

While the difficulties of milk supply became evident during the war, they originated in a state of matters which did not really belong to the war period, but had existed for a long time. The production of milk for direct use, which has undergone a great increase in comparatively recent times, is a branch of agricultural work which has never been on a strictly economic footing. Upwards of 28 per cent of the cows in Scotland are on holdings of less than 50 acres; and the fact that a further 60 per cent are on holdings between 50 and 300 acres in extent, points to the conclusion that probably not less than half the cows in the country are on holdings of less than 100 acres. Such holdings, however, are for the most part worked almost entirely by the occupiers and their families, little hired labour being employed; and this applies especially to the dairy work of the holdings. It is, however, only in very rare instances that the working families of the occupiers receive any actual wages, while it is certain that they work at least as hard and as efficiently as hired workers. It results from this that not less than half the milk supply is produced by labour which costs very little more than the bare cost of its maintenance. When it is added that the occupiers of these smaller dairy farms are, and have long been, among the most industrious, and by far the most thrifty of all classes of the population, and that in spite of this they have not, on the whole, accumulated any very considerable wealth, it will be seen that milk has been produced at a price very unlikely to yield a profit under conditions in which labour received a normal reward. Milk producers who paid reasonable wages have been in competition with what has all along been sweated labour.

The circumstances created by the war brought this state of affairs into sharp relief. Producers who were independent of hired labour, and were therefore unaffected by the increase of wages, profited by the steady rise in prices; and those who were able to grow on their holdings the greater part of the food required by their cattle, found in the sale of milk a ready method of disposing of the produce of their farms. On the other hand, milk production became a doubtfully profitable use of produce valued at the price at which it could easily be sold; and while producers who bred their own dairy stock made considerable profit from the sale of surplus cows,[1] those who were compelled to buy both their milk cows[1] and their feeding-stuffs and to pay for all the necessary labour were unable to produce milk at the prices allowed. Milk production, considered apart from the employment of family labour,

[1] Appendix I., Tables VIII. and XI., pp. 52 and 54.

and from the general working of the arable dairy farms, became less profitable than it had been in pre-war times. The industry was seriously discouraged, and the end of the war found it in a critical position. The prices fixed were indeed adequate in respect of the milk produced under the uneconomic system which has been described; but they were not such as to encourage the employment in milk production of highly-paid labour and the use for that purpose of saleable crops or purchased feeding-stuffs. The sufficiency, especially, of the winter supply had been seriously imperilled by a scale of prices which was inadequate in relation to the more expensively produced part of it.

The difficulties of cattle-feeding were aggravated by a different cause. In the experience of those who watched the influence of price control upon the profits of the feeder, it became apparent that these profits could not, in the circumstances, be substantially and continuously increased by raising the scales of the permitted prices. Any increase which was allowed influenced the price of store cattle so immediately and so substantially that it diverted the increase from the feeder to the breeder of store cattle, and thus failed to give that encouragement to the feeding industry which, in the circumstances of the time, was the only justification on public grounds for any increases. This experience, it may be said incidentally, revealed, in a critical period, one of the weakest joints in the agricultural harness of the nation—the inadequate supply of the store cattle upon which the success, not merely of cattle-feeding but of arable farming, so largely depends.[1] The removal of this obstacle to agricultural development is one of the acute problems of the future of farming in Scotland.

While the profits of farming were on the whole increased by the circumstances of the war, the two branches in which this has been most conspicuous have been those of arable cultivation and sheep farming. In both, certainly, price restriction set a limit to profits; but the limit was not a narrow one. The arable farmer no doubt encountered, especially in the later years of war, great increases in his costs as well as great hindrances in the conduct of his business; but the prices of produce were well in proportion to the costs of production; and in spite of great difficulties production was maintained. In the case of the sheep farmer—especially the owner of hill sheep—the main outlay was the rent of his land, and this underwent no increase, while the increases in his wage-bills and other outlays were probably not such as to make the prices fixed for wool and mutton oppressive in their incidence, although he may well have entertained a grievance against the Army

[1] Appendix I., Tables VIII. and XI., pp. 52 and 54.

Council, which is alleged to have made large profits by the sale of his wool.[1]

In both these cases it must be remembered that the risks were—as they always are—greater than those of other departments of farming, and that these risks were made greater than usual by the circumstances. The financial losses of bad lambing times and of bad harvests were at no other time so likely to be serious as they were in the years of war, in which all prices were inflated.

In the case of arable farming it must also be observed that many of the outlays made in a period of high prices reflect themselves into a subsequent period in which much lower prices are likely to prevail. This is true even in the case of cultural operations forming part of the work of a rotation. A proportion of the cost of labour spent in the operations of root cropping in the last years of war falls to be recovered in subsequent crops; and expenditure in high wages may thus have to be realised in a time of lower prices. Similarly the artificial fertilisers bought at high war prices are partly to be paid for by the crops of future years. It is difficult to believe that the produce of all these crops will be sold at prices likely to justify this outlay upon them; and this is even more definitely clear in the case of purchases of a more enduring kind. In a time of expansion and of labour shortage large quantities of implements were necessarily bought; and they were bought at prices which make it all but certain that they must greatly depreciate in value. Horses, bought in large numbers for additional cultivation as well as for replacement, commanded prices which ascended steadily up to and beyond the end of the war.[2] The demand for horses for the Army, which formed part of the cause of this rise in prices, must gradually return to a normal level; and it is by no means certain that the numbers required for cultivation will be as great in 1920 as they were in 1918. It may thus be taken as certain that a large part of the additional capital applied to agriculture during the war must be written off; and if it has not been made good out of the profits of war production, it must be regarded as lost.

It would not, therefore, be easy to estimate by how much farmers generally have profited by the war. It is, however, certain that, like so many other classes in the community, they came through, and emerged from, the struggle with a strong opinion that they were better off than they had been before; and one significant result of this has been the steady upward tendency of the prices of pedigreed animals.[3] There was, no

[1] Appendix I., Table XVI., p. 60. [2] Appendix I., Table XII., p. 57.
[3] Appendix I., Table XIII., p. 58.

doubt, throughout the war a strong conviction among stock-breeders that a great demand for their animals would come with the close of hostilities; but this does not sufficiently account for the degree in which prices of almost all classes of pedigreed stock, even in the partial absence of that foreign demand on which high prices had hitherto depended, kept continually rising, while record after record disappeared in turn into obscurity. The fact was that farmers not only found themselves, in many cases, in possession of an unusual amount of free money, but had also gained from prosperity, whether temporary or enduring, a new confidence in the possibilities of their business which led them to spend freely on the improvement of their live stock. It will probably be found that one of the agricultural results of the war has been to improve substantially the quality of the commercial live stock of Scotland by diverting to the amelioration of the home flocks and herds stud animals which, in other circumstances, would have gone abroad.

General.

Such, in short outline, is the history of Scottish farming during the war. It was subjected to an unprecedented and unimagined strain; it was set to solve an unforeseen problem. After generations of neglect, it was suddenly recognised as one of the chief national interests and as a vital factor in the stress of war. At the same moment it was deprived of many of its chief aids to production and of a large proportion of its most efficient labour. It has emerged with an honourable record, and achieved what those who knew it best might have regarded as an impossible task; it has made, in response to the national demand, an enormous increase of production at the precise juncture when production had been made most difficult; and this result was chiefly due to the men engaged in it. It is not material to consider whether they were all equally patriotic. It need not be alleged that they all showed equal capacity or equal readiness to face their appointed task. What is material is the fact that they succeeded. The limitations and the tendency of an industry may be set by circumstances, but its vitality depends upon the men who carry it on; and Scottish agriculture played its part in war and served the national purpose, because the men engaged in it were equal to their task. Learners in a hard school, accustomed year by year to confront difficulties greater than generally beset the farmer's calling—to sow their seed in inclement springs and snatch their harvest from the jaws of winter—they were not found wanting in the greatest emergency of their country's history.

No narrative of the work of Scottish agriculture during the

war, however incomplete otherwise, could omit to note the diligent and steadfast help of the farm-servants. No class, perhaps, in all the nation emerged with a cleaner record from the trial by battle. They gave their full proportion—perhaps more than their proportion—to the fighting services. But it is to their work on the farms that I refer here. It will be generally agreed that, taken as a whole, they did not make unfair demands or seek to derive undue advantage from a situation which offered them great opportunities. It will not be disputed that their willing and reliable work was a most essential factor in the success of Scottish war agriculture, that, in their case, improved conditions of service were a stimulus and not a check to industry, and that they showed themselves worthy of the trust that was reposed in them.

The Present Outlook.

To this bald narrative of facts it may be permissible to add a few observations on the situation in which the war leaves Scottish agriculture.

A fact of minor, but quite real, importance is that some deterioration in the state of the farms has been an inevitable result of war conditions. Grass has been ploughed up which, in other circumstances, had been better left to grow. Customary rotations have sometimes avenged their violation by showing that the "war" farming which abandoned them is no permanent aid to production. Lack of labour has allowed land to grow foul and left an evil legacy of weeds. Draining, already much in arrear, has fallen further than ever behind.

Against this there may be set the stimulus given to production by war necessities—the improvement of machinery, the discovery of neglected feeding-stuffs, the general enlivening of agriculture.

The present productiveness of the industry is no doubt for the moment impaired, but only to an extent which can easily be made good if circumstances allow. But more serious problems remain. The war has revealed to us the entire inadequacy of our national agriculture. We have seen it as it stood—unproductive either of an adequate supply of food or of the opportunity of a satisfactory and well-rewarded life for those who labour in it. The fundamental question is whether it is to revert to that condition, or whether some better way can be found.

This is not a question for farmers. It is a question of high policy. Farmers were not the chief sufferers by the pre-war state of matters. They had found a fairly safe way of evading the risks attendant on high production; and it would pro-

bably expose them, as individuals, to no great inconvenience, if production were allowed to return to its former way. Whatever danger there may be in this is danger to the State —danger from an unprogressive industry, danger of inadequate food-supply in war, danger of an impoverished and declining rural population.

The situation is quite clear. If nothing be done to stimulate agricultural production, the industry will return to a condition closely approximating to that in which the war found it. Scientific research, increased facilities for instruction in agriculture, and the growth of agricultural co-operation will improve the profits of farming, but they will do little to alter the direction of its development—to maintain the cultivation of land, or to counteract the tendency to grass-farming; for science, education, and organisation are applicable to the less intensive forms of farming as well as to cultivation. The industry, if left to itself, will take the course which appears to those engaged in it to be safest and most profitable; and the work of research, education, and organisation will necessarily be adapted to the form which the industry assumes. In one respect, at least, the events of the war have made the prospects of cultivation more difficult than they were in 1914, since the increase in wages, which the war and the Corn Production Act have stimulated, cannot be seriously regarded as transient or temporary, but must in greater or less degree be recognised as a permanent addition to the cost of cropping; and this increase in the expense and risk of tillage cannot fail to influence the decision of the occupier of land in his choice between maintaining and reducing cultivation.

One of the plainest lessons of agricultural experience during the war has been the fact that production is very much a question of prices. The increase which took place was undoubtedly, in its main intention, a patriotic response to a national appeal; but it was a response which would not, and indeed could not, have been made but for the fact that the prices obtained for produce, and the prospect that these prices would be maintained—at all events during the war—were sufficient to warrant increased production, even at a time when its costs and difficulties were greater than they had ever previously been,—when, in fact, every condition except price was as unfavourable to increased production as it could possibly be. Still more must we expect considerations of price to rule the choice between increase and reduction of cultivation when, as is even now the case, a patriotic appeal is not more legitimately or effectively addressed to farmers than to persons engaged in any other calling. If the nation desires to prevent agriculture from returning to the pre-war level of productiveness

and cultivation, it must address itself seriously to the use of means to this end; and, above all other aspects of the problem, it must consider the matter of prices; for it was on account of ruinously low prices that land fell out of cultivation; it was the stimulus of high prices which enabled cultivation to be resumed; and it is by confidence, or the lack of confidence, in the continuance of profitable prices that the maintenance or abandonment of cultivation will chiefly be determined. This is not the occasion for a discussion of the methods by which the necessary confidence may be produced. All that need be said is that, for the moment, the method of guarantee set forth in theory in the Report of Lord Selborne's Committee, and imperfectly embodied in the Corn Production Act, holds the field.

It would, however, be mere blindness to suppose that security as to prices is the only problem of the agricultural future. It is a problem whose solution is, indeed, antecedent to the effectiveness of any other remedy, but still leaves many difficulties untouched. In so far as these are technical, they may safely be left to be resolved by the growth of existing agencies, backed by the financial support of the State on a scale commensurate rather with the greatness of the interests at stake than with the almost negligible provision hitherto made. In so far as they are caused by the obstinate desire of officials to retain, in time of peace, the restriction of prices and the whole apparatus of Government trading which was an unhappy necessity of war, producers must unite to resist the paralysis of their business that would be inseparable from such proposals.

There remains still the most difficult of all our urgent problems — the question how the equipment and tenure of land shall be provided and regulated.

It is a curious legacy of war that this problem should have become, as it evidently has, an acute one. Increase of cultivation has, however, entailed expenditures on a scale which is felt to require greater security for the value of improvements made than tenants enjoy under the Agricultural Holdings Acts; and at the very moment when this has been more keenly realised, the existing moral security, which was given by practice and tradition, has been rudely shaken by large sales of estates and consequent disturbance of tenancies. To many observers it appears that we are at the beginning of the end of the system under which successive generations have lived, and have more or less thriven, since the birth of real farming in Scotland early in the eighteenth century. Whether this be so or not, it is at all events certain that the interests of national production are not served by uncertainty and

agitation of opinion on matters so fundamental; and we are left to choose between three broad alternatives. We must either contrive some amendment of the Agricultural Holdings Acts fitted to give adequate security and a more equitable basis of compensation for improvements, or else we shall be driven to choose between a large system of Land Purchase, financed and controlled by the State, and some such measure for giving security of tenure as has been frequently suggested but never coherently presented. The discussion of these alternatives can find no place here; but it is a sequel of the war, and a part of its effect on agriculture, that a land policy has become inevitable.

Meantime, the situation is one that does not admit of delay in the framing of an agricultural policy. The producers stand released from the strain of their efforts, conscious of a great success, but conscious also of a great uncertainty as to their future, a little bewildered by the sudden transition from their late feverish activities to a condition whose very normality has a certain strangeness. Still in their ears are the war speeches about them and their business—the impassioned appeals, the repentance over past neglect, the vows of future amendment. But they have become aware that they are no longer in the limelight. They begin to wonder whether real penitence or ordinary fear was the emotion behind the eloquence of the orators—a change of heart, or only a yearning of the stomach.

They are therefore in doubt what to do next. They await the decision of the country. But they do not all wait inactively; and many of them hasten to return to the old ways, because they regard recent events as a transitory phase beginning and ending with the war. For the moment, at all events, those who return to the pre-war point of view are certainly right; for the country has at present no real agricultural policy, and agriculture takes its chance with other industries. Those, therefore, who are engaged in it must pursue their interests as best they may. Whither these interests shall lead them, neither they nor any one else can yet know.

The choice lies between the tillage and the idle occupation of the land of the country. But the choice does not rest with the farmer: the nation must decide.

APPENDIX I.

TABLE I.—Acreage under Crops and Grass in Scotland for the Years 1914-18, with the Average of the Ten Years, 1904-1913.

Distribution.	Average 10 Years, 1904-1913.	1914.	1915.	1916.	1917.	1918.
Total area (excluding water)	19,069,683 Acres.					
Total acreage under Crops and Grass*	4,855,065	4,786,181	4,781,397	4,775,506	4,776,323	4,760,748
Mountain and Heath Land	...	...	9,133,513	9,168,904	9,281,494	9,358,996
Arable Land	3,382,600	3,295,487	3,289,902	3,303,741	3,360,562	3,452,156
Permanent Grass* — For Hay	...	156,662	154,685	159,223	159,744	151,990
Permanent Grass* — Not for Hay	...	1,334,032	1,336,810	1,312,542	1,256,017	1,156,602
Permanent Grass* — Total	1,472,465	1,490,694	1,491,495	1,471,765	1,415,761	1,308,592
Wheat	51,133	60,521	76,654	63,083	60,931	79,237
Barley (including Bere)	199,446	194,109	149,346	169,739	159,135	153,332
Oats	955,989	919,580	982,601	990,589	1,041,343	1,240,004
Mixed Corn†	...	...	...	...	...	7,096
Rye	5,958	5,349	4,813	5,742	4,963	5,903
Beans (to be harvested as Corn)	9,495	6,123	5,382	5,440	6,135	8,295
Peas	950	691	665	591	396	547
Total Corn Crops	1,222,971	1,186,373	1,219,461	1,235,184	1,272,903	1,494,414
Potatoes	142,602	152,318	144,393	130,119	147,717	169,376
Turnips and Swedes	442,667	430,608	420,995	414,320	414,305	396,486
Mangolds	2,418	1,927	2,503	2,347	2,415	2,810
Cabbage	6,864	5,015	4,809	4,673	3,477	3,826
Rape	6,853	8,754	6,290	7,862	4,368	2,852
Vetches or Tares, for Seed	...	882	957	704	421	419
Vetches, Tares, Beans, Peas, Mashlum, &c., for Fodder	9,074	10,678	10,167	10,495	11,480	14,163
Lucerne	...	6	14	13	6	8
Carrots	...	446	384	462	642	480
Onions	...	186	195	183	215	174
Flax	...	6	37	17	9	1,349
Small Fruit	7,149	7,271	7,054	7,127	6,810	6,413
Ryegrass and other rotation Grasses and Clover — For Hay	...	408,254	390,105	420,099	421,502	389,146
Ryegrass and other rotation Grasses and Clover — Not for Hay	...	1,073,655	1,073,881	1,060,230	1,066,448	962,745
Ryegrass and other rotation Grasses and Clover — Total	1,532,059	1,481,909	1,463,986	1,480,329	1,487,950	1,351,891
Other Crops	2,823	1,880	1,683	1,711	1,807	1,775
Bare Fallow	7,120	7,228	6,974	8,195	6,037	5,720
Orchards	...	1,473	1,489	1,520	1,614	1,697

* Not including mountain and heath land. † Not separately distinguished before 1918.

TABLE II.—Number of Various Classes of Horses, Cattle, Sheep, and Pigs in Scotland for the Years 1914-18, with the Average for the Ten Years 1904-1913.

Class.	Average of 10 Years, 1904-1913.	1914.	1915.	1916.	1917.	1918.
Horses used for Agricultural purposes (including Mares for Breeding)	152,873	135,523	128,953	133,463	135,418	137,169
Unbroken Horses (including Stallions) — One year and above	34,115	33,004	32,422	34,511	37,006	36,291
Unbroken Horses (including Stallions) — Under one year	13,690	13,690	13,293	14,904	13,698	13,141
Total	200,678	182,217	174,668	182,878	186,122	186,601
Other Horses	...	27,143	24,036	24,412	23,926	23,282
Total of Horses	...	209,360	198,704	207,290	210,048	209,883
Cows in Milk	...	363,619	3[illegible]1,077	354,408	346,728	345,393
Cows in Calf, but not in Milk	434,736	44,200	43,337	41,056	45,143	52,842
Heifers in Calf	...	45,884	44,779	45,312	49,931	53,714
Other Cattle — Two years and above	255,331	242,070	229,602	239,254	230,878	218,451
Other Cattle — One year and under two	280,544	271,442	293,802	297,620	292,453	293,377
Other Cattle — Under one year	227,423	247,759	251,336	248,724	244,726	244,919
Total of Cattle	1,198,034	1,214,974	1,223,933	1,226,374	1,209,859	1,208,696
Ewes kept for Breeding	2,968,969	2,975,008	3,004,908	3,018,780	3,027,001	3,011,057
Other Sheep — One year and above	1,356,929	1,166,983	1,219,490	1,253,733	1,212,040	1,068,049
Other Sheep — Under one year	2,792,350	2,883,829	2,851,400	2,783,351	2,634,193	2,784,062
Total of Sheep	7,118,248	7,025,820	7,075,798	7,055,864	6,873,234	6,863,168
Sows kept for Breeding	17,455	19,409	17,652	17,588	14,794	16,671
Other Pigs	124,563	133,359	141,405	128,802	118,151	111,544
Total of Pigs	142,018	152,768	159,057	146,390	132,945	127,615

TABLE III.—Total Produce and Yield per Acre of each of the Principal Crops in Scotland for the Years 1914-18, with the Average Yield per Acre for the Ten Years 1904-13.

CROP.	TOTAL PRODUCE.					YIELD PER ACRE.					
	1914.	1915.	1916.	1917.*	1918.*	1914.	1915.	1916.	1917.*	1918.*	Aver. 10 Yrs. 1904-13
	Quarters.	Quarters.	Quarters.	Quarters.	Quarters.	Bush.	Bush.	Bush.	Bush.	Bush.	Bush.
Wheat	320,102	369,919	283,097	304,000	402,000	42·31	38·61	35·90	39·94	40·65	40·21
Barley (including Bere)	922,925	628,131	647,145	705,000	689,000	38·04	33·65	30·50	35·54	36·08	35·90
Oats	4,618,850	4,885,190	4,527,536	5,447,000	6,457,000	40·18	39·77	36·56	41·85	41·53	37·63
Beans	29,428	24,418	24,447	29,700	33,200	38·45	36·29	35·95	38·70	36·54	36·34
Peas	586	405	424	...	...	24·27	25·54	23·56	...	...	27·67
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Potatoes	1,077,579	972,084	531,019	1,110,000	1,150,000	7·07	6·73	4·08	7·51	6·79	6·50
Turnips and Swedes	6,311,483	7,532,792	5,896,871	8,053,000	5,464,000	14·66	17·89	14·23	19·44	13·78	16·75
Mangolds	42,080	55,570	44,240	53,000	49,000	21·84	22·20	18·85	21·82	19·23	18·39
						Cwts.	Cwts.	Cwts.	Cwts.	Cwts.	Cwts.
Hay from Ryegrass, &c.	629,159	543,029	759,910	657,000	594,000	30·82	27·84	36·18	31·19	30·48	32·19
Hay from Permanent Grass	154,856	142,905	177,599	141,000	131,000	27·15	24·98	30·94	25·13	25·39	29·63
Hay from Timothy Meadows	85,459	79,340	97,341	103,000	93,000	40·15	39·40	43·81	43·19	40·68	

* Approximate.

TABLE IV.—Estimated Produce of Crops in the United Kingdom during the Years 1914 and 1918.

Crop.	Country.	1914.	1918.	Difference.	Percentage, Increase or Decrease.
		Thousands of Quarters.			
Wheat.	Scotland	320	402	+ 82	+ 25·6
	England and Wales	7,307	10,534	+ 3,227	+ 44·2
	Ireland	177	711	+ 534	+ 301·7
	United Kingdom	7,804	11,647	+ 3,843	+ 49·2
Barley.	Scotland	923	677	− 246	− 26·7
	England and Wales	6,174	6,085	− 89	− 1·4
	Ireland	969	1,003	+ 34	+ 3·5
	United Kingdom	8,066	7,765	− 301	− 3·7
Oats.	Scotland	4,619	6,457	+ 1,838	+ 39·8
	England and Wales	9,554	14,336	+ 4,782	+ 50·1
	Ireland	6,491	10,400	+ 3,909	+ 60·2
	United Kingdom	20,664	31,193	+ 10,529	+ 51·0
		Thousands of Tons.			
Potatoes.	Scotland	1,077	1,150	+ 73	+ 6·8
	England and Wales	2,953	4,209	+ 1,256	+ 42·5
	Ireland	3,446	3,863	+ 417	+ 12·1
	United Kingdom	7,476	9,222	+ 1,746	+ 23·4
Turnips and Swedes.	Scotland	6,311	5,464	− 847	− 13·4
	England and Wales	13,451	12,018	− 1,433	− 10·7
	Ireland	4,434	5,303	+ 869	+ 19·6
	United Kingdom	24,196	22,785	− 1,411	− 5·8
Mangolds.	Scotland	42	49	+ 7	+ 16·7
	England and Wales	7,919	8,231	+ 312	+ 3·9
	Ireland	1,562	2,041	+ 479	+ 30·7
	United Kingdom	9,523	10,321	+ 798	+ 8·4
Hay.	Scotland	869	818	− 51	− 5·9
	England and Wales	7,265	6,785	− 480	− 6·6
	Ireland	4,269	4,728	+ 459	+ 10·7
	United Kingdom	12,403	12,331	− 72	− 0·6

TABLE V.—Estimated Numbers of Live Stock in the United Kingdom during the Years 1914 and 1918.

	Class of Stock.	1914.	1918.	Difference.	Percentage, Increase or Decrease.	Class of Stock.	1914.	1918.	Difference.	Percentage, Increase or Decrease.
		Thousands.					Thousands.			
Scotland	Dairy Herd.	453	452	−1	−0·2	Sows.	20	16	−4	−20·0
England and Wales		2,482	2,578	+96	+3·9		340	290	−50	−14·7
Ireland		1,639	1,557	−82	−5·0		133	105	−28	−21·5
United Kingdom		4,574	4,587	+13	+0·3		493	411	−82	−16·6
Scotland	Other Cattle.	762	758	−4	−0·5	Other Pigs.	133	112	−21	−15·8
England and Wales		3,396	3,622	+226	+6·7		2141	1407	−734	−34·3
Ireland		3,413	3,306	−107	−3·1		1173	869	−304	−25·9
United Kingdom		7,571	7,686	+115	+1·5		3447	2388	−1059	−30·7
Scotland	Total Cattle.	1,215	1,210	−5	−0·4	Total Pigs.	153	128	−25	−16·3
England and Wales		5,878	6,200	+322	+5·5		2481	1697	−784	−31·6
Ireland		5,052	4,863	−189	−3·7		1306	974	−332	−25·4
United Kingdom		12,145	12,273	+128	+1·1		3940	2799	−1141	−29·0
Scotland	Ewes.	2,975	3,015	+40	+1·3	Agricultural Horses (including Mares).	136	137	+1	+0·7
England and Wales		6,838	6,487	−351	−5·1		791	822	+31	+3·9
Ireland		1,408	1,449	+41	+2·9		394	414	+20	+5·1
United Kingdom		11,221	10,951	−270	−2·4		1321	1373	+52	+3·9
Scotland	Other Sheep.	4,051	3,863	−188	−4·6	Other Horses on Farms.	73	73	...	...
England and Wales		10,422	9,988	−434	−4·1		609	554	−55	−9·0
Ireland		2,192	2,178	−14	−0·6		152	157	+5	+3·3
United Kingdom		16,665	16,029	−636	−3·8		834	784	−50	−6·0
Scotland	Total Sheep.	7,026	6,878	−148	−2·1	Total Horses.	209	210	+1	+0·5
England and Wales		17,260	16,475	−785	−4·5		1400	1376	−24	−1·7
Ireland		3,600	3,627	+27	+0·8		546	571	+25	+4·6
United Kingdom		27,886	26,980	−906	−3·2		2155	2157	+2	+0·1

CROP PRICES.

TABLE VI.—Average Prices of First Quality Commodities of the Specified Classes at the various Scottish Markets reported in the Weekly Return of Market Prices.

Description.	1914.	1915.	1916.	1917.	1918.*
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Wheat . . . . . per qr.	34 4	52 6	58 1	75 11	76 1
Barley . . . . . ,,	28 7	39 1	59 5	67 4	65 0
Oats . . . . . ,,	22 4	31 3	34 10	50 9	47 6
Potatoes—First Earlies . . per ton	141 6	107 0	229 9	170 10	260 0
Second Earlies (British Queens) ,,	63 5	76 8	192 5	124 4	148 0
Maincrops (Up-to-date varieties on ordinary soils) ,,	45 6	59 9	160 2	202 4	135 0
Swedes . . . . . ,,	22 2	25 11	28 7	54 11	48
Hay—Ryegrass and Clover . ,,	71 11	113 8	137 10	143 10	158
Timothy . . . . ,,	65 1	102 4	165 3	...	...
Straw—Wheat . . . ,,	41 3	55 9	77 9	64 8	75 6
Oat . . . . ,,	43 6	60 9	84 8	66 3	81 0

* Approximate figures.

FAT STOCK.

TABLE VII.—Average Prices of First Quality Animals of the Specified Classes at the various Scottish Markets reported in the Weekly Return of Market Prices.

Year.	Cattle.		Sheep.			Pigs.	
	Aberdeen-Angus.	Cross-breds.	Cheviots.	Black-faces.	Grey-faces.	Baconers.	Porkers.
	per cwt. *s. d.*	per cwt. *s. d.*	per lb. *d.*	per lb. *d.*	per lb. *d.*	per stone. *s. d.*	per stone. *s. d.*
1907-11	39 10	38 9	$8\frac{1}{2}$	$7\frac{3}{4}$	$8\frac{3}{4}$	6 9	7 2
1912	44 7	43 6	9	$8\frac{1}{4}$	$9\frac{1}{4}$	6 10	7 4
1913	43 4	41 8	10	9	10	7 10	8 6
1914	43 10	42 5	$10\frac{1}{4}$	$9\frac{1}{2}$	$10\frac{1}{4}$	7 4	8 1
1915	58 8	56 9	$11\frac{1}{2}$	$10\frac{1}{2}$	$11\frac{1}{2}$	8 6	9 3
1916	66 11	64 8	$13\frac{3}{4}$	$12\frac{3}{4}$	$13\frac{3}{4}$	11 8	12 6
1917	86 4	83 11	17	$15\frac{3}{4}$	17	15 2	16 0
1918	76 0	75 8	$16\frac{3}{4}$	$16\frac{1}{4}$	$16\frac{1}{2}$	17 4	17 4

STORE STOCK AND COWS IN MILK.

TABLE VIII.—Average Prices of First Quality Animals of the Specified Classes at the various Scottish Markets reported in the Weekly Return of Market Prices.

Description.	1914.	1915.	1916.	1917.	1918.*
	£ s.	£ s.	£ s.	£ s.	£ s.
Aberdeen-Angus—Yearlings	14 14	15 15	18 17	23 17	24 6
" Two-year-olds	18 19	22 6	26 16	33 11	33 11
Cross-bred—Yearlings	12 11	14 0	16 11	20 16	21 3
" Two-year-olds	17 6	20 17	25 9	32 7	32 15
Highland—Yearlings	8 11	9 9	11 7	14 16	15 14
" Two-year-olds	11 17	13 9	15 9	18 17	22 15
	s. d.	s. d.	s. d.	s. d.	s. d.
Cheviots—Ewe and wether hoggs	37 1	39 9	47 7	56 1	55 8
Blackface "	29 6	29 4	37 6	43 1	52 8
Half-bred "	45 1	48 11	60 8	68 5	75 5
Greyface "	39 5	42 3	52 3	57 8	62 9
	£ s.	£ s.	£ s.	£ s.	£ s.
Ayrshire cows in milk	20 0	21 14	27 16	37 6	48 1
Shorthorn cross cows in milk	24 1	26 7	33 13	44 10	57 0
	s. d.	s. d.	s. d.	s. d.	s. d.
Pigs—6 to 10 weeks old	26 5	25 2	34 3	42 0	67 5
Calves for rearing	67 11	73 8	81 1	102 10	...

* Approximate figures.

MILK, CHEESE, BUTTER, AND EGGS.

TABLE IX.—Average Prices of Milk, Butter, Cheese, and Eggs, compiled from Weelly Returns of Market Prices.

Description.	1914.	1915.	1916.	1917.	1918.
	d.	d.	d.	d.	d.
Milk*—Aberdeen per gal.	8	8¼	10	15½	...
Dundee "	8¾	10¾	16¼	20¾	...
Edinburgh (locally produced milk) "	11	12¼	16½	19¾	...
Glasgow "	8¼	9	14½	19¼	25¼
	s. d.	s. d.	s. d.	s. d.	s. d.
Butter—Scotch creamery (unsalted) per cwt.	140 0	...	180 0	...	...
Irish creamery "	122 1	150 7	169 4	207 6	247 9
Danish "	125 3	155 1	180 11	218 2	...
Cheese—Cheddar (First) "	71 10	88 11	107 6	144 0	160 10
Dunlop (") "	68 8	87 0	104 6	142 1	160 10
Canadian (") "	72 8	84 2	106 8	130 8†	144 4
Eggs—Country (") per doz.	1 7	1 11	2 6	3 0	4 10
Irish (") per 120	13 0	16 2	20 4	26 9	43 8

* Wholesale prices. † Last five months only.

TABLE X.—Variation in **Average Monthly Prices** of certain Commodities during the Years 1914-18.

A. WHEAT—per quarter of 504 lb.

Year.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
1914	29 3	29 11	30 1	30 7	32 0	33 2	32 7	38 5	35 7	36 11	40 5	43 1	34 4
1915	50 7	56 1	53 2	54 10	60 7	51 6	51 8	54 4	45 5	46 4	51 11	53 7	52 6
1916	56 9	58 6	55 10	52 3	53 11	46 2	49 7	59 5	61 4	61 8	69 3	72 2	58 1
1917	72 8	76 0	79 6	83 8	..	..	..	..	73 6	75 4	73 9	73 1	75 11
1918	74 6	75 6	75 6	76 9	76 9	77 9	77 9	..	75 6	75 6	75 6	75 6	76 1

B. OATS—per quarter of 336 lb.

1914	18 4	18 7	20 4	19 2	20 4	20 6	20 6	28 6	24 0	23 7	27 4	26 10	22 4
1915	29 6	31 8	30 11	31 10	34 4	34 0	32 3	32 6	27 5	28 6	31 0	30 9	31 3
1916	33 1	32 9	31 9	32 1	34 2	31 9	32 7	34 6	32 9	33 4	40 5	48 5	34 10
1917	47 8	48 10	55 9	66 3	..	..	..	..	45 4	45 7	47 2	49 5	50 9
1918	45 3	46 3	46 3	47 3	47 3	48 6	48 6	..	47 6	48 0	48 6	49 0	47 6

C. POTATOES—per ton.—First Quality Up-to-Date Types from Ordinary Soils.

1914	44 2	42 5	41 8	51 0	47 3	49 2	..	..	..	35 0	46 2	53 0	45 6
1915	58 9	63 2	58 2	58 9	62 11	60 5	47 6	..	..	53 2	66 9	67 6	59 9
1916	68 2	65 2	74 8	109 2	146 6	204 9	200 0	..	..	195 0	283 4	254 6	160 2
1917	264 0	275 0	250 0	..	..	..	..	..	..	..	114 4	108 4	202 4
1918	111 4	110 8	112 3	112 4	132 0	147 3	195 0	..	..	..	140 0	154 2	135 0

D. HAY—per ton.—First Quality Ryegrass and Clover.

1914	74 1	72 9	71 6	71 9	72 0	71 0	71 5	69 3	70 10	71 4	72 7	74 0	71 11
1915	80 2	90 8	94 10	106 1	116 0	125 11	129 10	108 11	115 8	127 11	135 8	132 2	113 8
1916	153 10	164 4	180 7	190 0	..	..	..	95 1	102 2	115 0	119 5	120 0	137 10
1917	136 8	140 0	140 0	155 4	154 8	150 7	150 0	129 0	139 5	140 6	145 8	143 9	143 10
1918	150 0	150 0	150 0	150 0	153 9	158 0	159 10	157 2	160 6	168 0	170 0	171 3	158 2

E. MILK—per imp. gal.—Wholesale Price in Glasgow.

	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
1914	10	9½	8½	7½	7	6½	6½	7	8	8½	9¼	9¾	8¼
1915	10	9½	8	7½	6¾	8	8	8	9	10	11	11	9
1916	14	14	13½	13¾	14	13½	13½	13½	13½	15½	18	18	14½
1917	18	18	18	18	18	18	18	18	19¾	20	23½	24½	19¼
1918	24½	24½	24½	24½	22½	20½	20½	23¾	24½	30¾	30¾	31½	25¼
Year.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.

TABLE XI.—Variation in **Average Monthly Prices** of certain Commodities during the Years 1914-18.

A. FAT CATTLE.—First Quality Cross-Breds—per live cwt.

Year.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
1914	41 3	41 3	42 0	41 6	41 2	41 11	42 6	43 4	42 10	42 9	43 8	45 3	42 5
1915	47 7	48 10	49 7	50 11	58 0	63 6	65 0	63 5	61 4	58 8	58 4	55 9	56 9
1916	54 4	54 8	56 2	61 9	67 11	74 4	74 0	70 4	63 6	61 3	65 7	71 9	64 8
1917	78 0	79 2	79 5	78 4	82 2	95 6	93 11	83 5	81 2	83 7	83 11	88 1	83 11
1918	75 1	75 0	75 6	75 9	75 9	75 8	75 7	75 8	75 8	75 7	75 5	77 1	75 8

B. FAT SHEEP.—First Quality Grey-faces—per lb.

	d.	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*	*d.*
1914	10½	10½	10½	10¾	11	10¼	9½	10	10	9¾	9¾	9¾	10¼
1915	10	10½	11½	13	14¼	12¾	11	10¾	10¾	10½	10¾	11¼	11½
1916	12	12½	13¼	14¼	14¾	15½	14½	13½	13¾	13¼	13¾	14½	13¾
1917	15	15	16½	17½	21½	20¾	18	15½	15¼	15¾	16	17½	17
1918	17¾	16½	16½	16½	17	16¾	16½	16½	16½	16½	16¼	16¾	16½

C. PIGS.—First Quality Baconers—per stone of 14 lb.

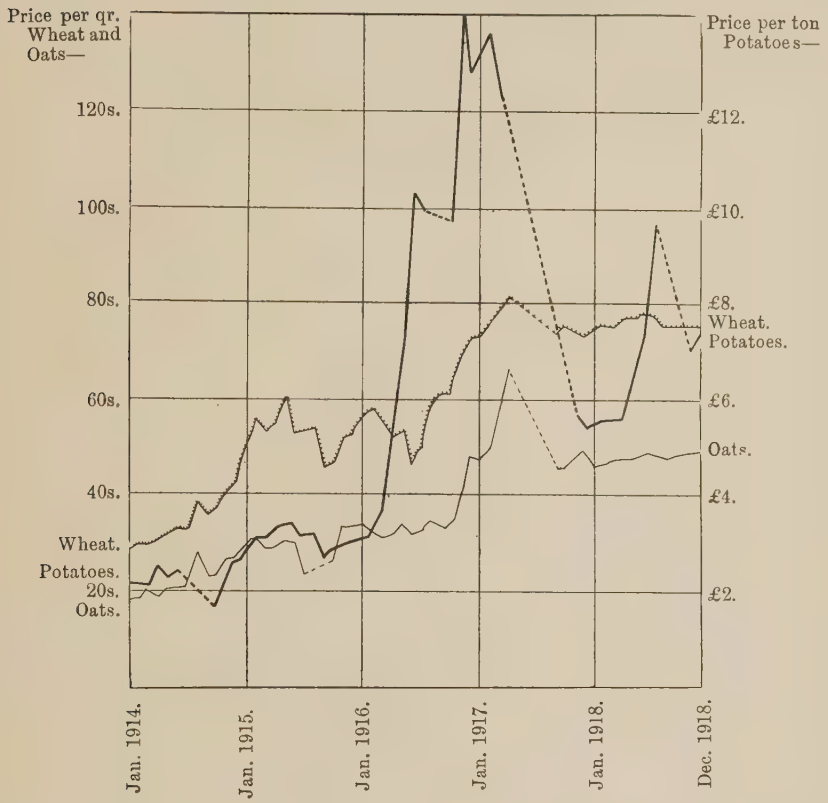
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
1914	8 1	8 0	7 9	7 7	7 2	7 1	6 9	7 0	7 1	7 1	7 1	7 3	7 4
1915	7 8	7 11	7 10	8 1	7 11	8 3	8 4	8 6	9 0	9 1	9 3	9 10	8 6
1916	10 4	10 9	11 0	11 5	11 7	11 9	11 9	11 9	12 1	12 5	12 6	12 6	11 8
1917	12 11	14 0	14 7	14 9	15 0	15 3	15 4	15 7	15 9	16 11	16 8	15 6	15 2
1918	16 2	16 5	16 5	17 2	17 4	17 6	17 6	17 8	17 8	17 8	18 1	18 0	17 4

D. COWS IN MILK.—First Quality Ayrshires—per head.

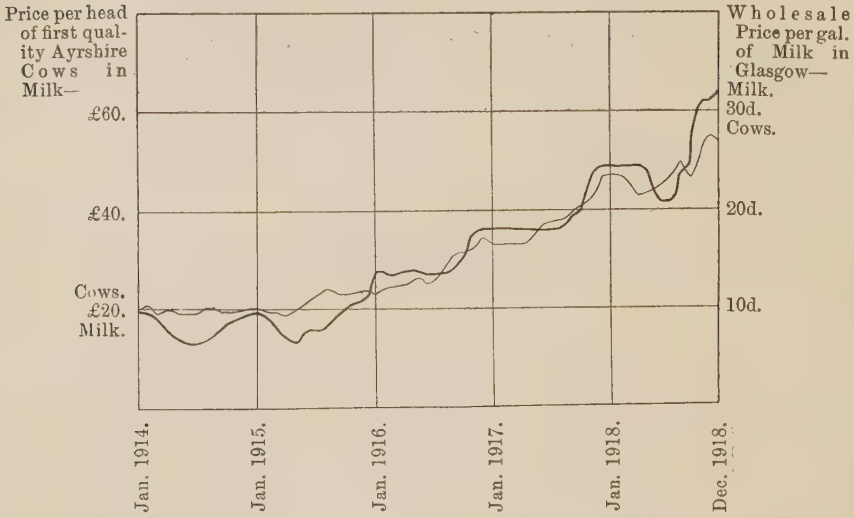
	£ *s.*	£ *s.*	£ *s.*	£ *s.*	£ *s.*	£ *s.*	£ *s.*	£ *s.*	£ *s.*	£ *s.*	£ *s.*	£ *s.*	£ *s.*
1914	20 5	20 13	19 12	20 0	20 6	19 16	20 4	20 1	19 14	19 6	19 16	20 7	20 0
1915	20 8	19 8	19 7	18 18	20 1	21 19	23 0	24 5	22 11	23 0	23 10	23 19	21 14
1916	23 7	24 6	24 8	25 2	26 8	25 7	25 10	28 14	31 6	31 7	32 11	35 4	27 16
1917	33 12	33 10	33 1	32 10	35 11	36 17	36 17	37 5	38 14	40 4	42 2	47 9	37 6
1918	47 3	47 0	45 4	42 15	43 10	44 5	46 16	50 5	46 16	53 0	55 7	54 16	48 1
Year.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year.

VARIATION IN AVERAGE MONTHLY PRICES OF WHEAT, OATS, AND POTATOES FROM JANUARY 1914 TO DECEMBER 1918.

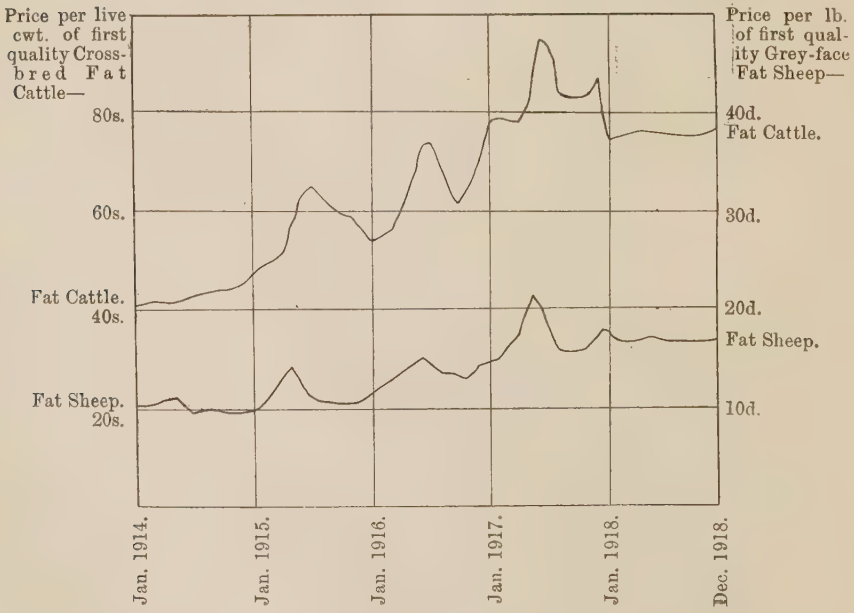
(Dotted parts of curves indicate no quotations.)



VARIATION IN AVERAGE MONTHLY PRICES OF AYRSHIRE COWS AND OF MILK FROM JANUARY 1914 TO DECEMBER 1918.



VARIATION IN AVERAGE MONTHLY PRICES OF FAT CATTLE (CROSS-BREDS) AND FAT SHEEP (GREY-FACES) FROM JANUARY 1914 TO DECEMBER 1918.



HORSES.

TABLE XII.—Numbers Sold and Average Prices Realised at Lanark October Sales of Various Classes of Clydesdales during the Years 1914-1918.

Class.	1914.			1915.			1916.			1917.			1918.		
	No.	Aver. Price.		No.	Aver. Price.		No	Aver. Price.		No.	Aver. Price.		No.	Aver. Price.	
		£ s. d.			£ s. d.			£ s. d			£ s. d.			£ s. d.	
Stallions	...	...		...	...		...	61 13 4		3	88 13 4		7	109 8 7	
Brood Mares	...	...		...	...		...	83 7 1		76	116 18 8		75	138 1 4	
Mares (3 yrs. old and upwards)	...	52 4 4		...	67 17 2		...	67 6 0		53	99 0 9		86	116 19 3	
Geldings (3 yrs. old and upwards)							60	69 4 7		80	114 2 9		128	120 5 4	
Two-year-old Fillies	...	46 10 11		...	60 4 1		...	66 13 4		247	96 0 2		262	121 2 3	
Two-year-old Geldings	...	43 11 6		...	50 1 8		288	54 4 6		325	73 13 10		393	91 14 6	
One-year-old Fillies	...	34 9 6		...	40 11 6		...	58 3 1		94	73 13 0		93	104 14 0	
One-year-old Colts and Geldings							...	39 3 0		110	49 6 6		118	65 3 0	
Filly foals	...	27 18 11		...	32 6 6		96	46 4 2		102	58 6 1		89	87 3 3	
Colt foals							140	30 8 6		147	42 0 5		118	60 13 3	

TABLE XIII.—Numbers and Average Prices of **Pedigreed Stock** sold at certain Public Sales in Scotland during the Years 1914-18.

A. CATTLE.

Year.	Shorthorn.		Aberdeen-Angus.		Galloway.		Highland.		Ayrshire.		British Holstein-Friesian.	
	No.	Average Price.	No.	Average Price.	No.	Average Price.	No.	Average Price.	No.	Average Price.	No.	Average Price.
		£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.
1914	1386	52 14 3	1476	29 13 2	...	...	70	28 0 0	53	16 10 0	13	15 13 10
1915	1465	49 4 8	1411	30 14 1	126	22 11 11	61	31 8 8	141	17 15 0	42	43 6 6
1916	1576	46 14 6	1409	35 5 0	128	27 14 9	57	34 4 0	160 75	18 0 0 80 0 0	162	55 12 6
1917	1463	102 19 9	1470	49 7 3	142	27 10 6	43	40 17 0	148 85	26 0 0 93 0 0	295	71 12 1
1918	1612	141 3 0	1563	55 9 0	103	31 10 8	61	48 14 5	154 169	35 6 0 102 10 0	199	56 19 2

Note.—The figures for Ayrshires refer to bulls only; the majority of pedigreed Ayrshire cows and heifers are sold privately. In 1916, 1917, and 1918, the second set of figures given refer to home sales in the years 1916-17, 1917-18, and 1918-19, and were supplied by the Secretary of the Ayrshire Cattle Society. The other figures relate to the annual bull sales at Ayr and Kilmarnock. In the case of other breeds, the numbers sold include bulls, cows, heifers, and calves.

B. SHEEP.

Class.	1914.		1915.		1916.		1917.		1918.	
	No.	Average Price.	No.	Average Price.	No.	Average Price.	No.	Average Price.	No.	Average Price.
		£ s. d.		£ s. d.		£ s. d.		£ s. d.		£ s. d.
Blackface rams	2508	8 2 3	3283	8 16 4	2919	10 3 9	2810	12 3 11	3350	17 1 2
" ram lambs	2837	2 9 5	2846	3 5 10	2583	3 18 0	2053	4 6 4	3134	5 3 4
Border Leicester rams	2593	9 8 4	2332	12 9 5	2390	13 18 10	2284	13 15 3	2498	15 16 8
Border Leicester ram lambs	348	4 5 7	367	5 18 11	194	8 2 9	193	10 5 11	687	6 18 6
Cheviot rams	989	8 12 7	985	10 1 11	1255	11 0 11	1135	13 10 6	1119	17 17 4
Half-bred rams	293	8 10 2	209	14 1 5	298	10 3 3	239	15 15 7	247	14 13 3
Oxford rams	701	10 19 2	679	12 18 11	666	14 6 1	827	12 13 3	718	19 18 1
" ram lambs	527	6 12 5	428	8 19 4	531	9 2 7	470	7 8 0	517	10 4 1
Shropshire rams	8	8 19 9	53	8 10 9	45	11 0 11	49	12 0 8	41	16 11 8
Suffolk rams	34	8 16 0	55	11 2 5	63	13 7 3	48	15 1 4	69	14 1 2
" ram lambs	300	9 18 11	391	8 12 6	366	9 8 5	409	10 2 11	336	12 16 7
Yorkshire and Wensleydale rams	107	6 17 8	135	7 12 1	124	8 7 0	137	8 14 5	121	9 16 2

Note.—The figures in this table are taken from the 'Scottish Farmer Album,' except as regards Ayrshires and British Holstein-Friesian, for which figures were supplied by the Secretaries of the respective Breed Societies and by the auctioneers at Ayr and Kilmarnock.

TABLE XIV.—AVERAGE PRICES PER TON OF CERTAIN **Fertilisers** DURING THE YEARS 1914-1918.

Description.	1914.	1915.	1916.	1917.	1918.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Nitrate of soda—15½ % nitrogen	10 15 0	10 10 0	17 10 0	21 0 0	...
Sulphate of ammonia—20 % nitrogen	12 15 0	14 7 6	17 6 3	15 10 0 (at works)	16 7 6 (carr. paid)
Nitrate of lime—13 % nitrogen	10 0 0	10 0 0	...	...	...
Nitrolim	10 12 6	9 2 6	12 10 0	...	...
Superphosphate—30 % sol. phos	(18 % N.) 2 15 0	(15½ % N.) 3 5 0	(15½ % N.) 4 15 0	5 7 0	6 12 0 (carr. paid)
Basic slag—26 % citric sol. phosphates	2 0 0	2 10 0	3 7 0	4 2 6	3 7 6 } at works
Bone meal	6 17 6	7 5 0	9 5 0	12 15 0	15 15 0 } at works
Steamed bone flour	4 17 6	5 10 0	7 12 6	10 0 0	13 15 0 } at works
Kainit	2 8 9	...	...	...	...
Muriate of potash—80 % pure	9 0 0	...	...	...	...
Potash salts—30 % potash	4 17 6	...	...	...	...
Ground mineral phosphate—60 % tot. phos.	2 7 6	3 0 0	5 15 0	6 0 0	5 10 0

Note.—The above prices are based upon the schedule drawn up in February of each year by the Highland and Agricultural Society of Scotland, and refer to cash prices current in that month for lots of 2 tons, including bags gross weight, at Leith and Glasgow—without carriage.

TABLE XV.—AVERAGE PRICES PER TON OF CERTAIN **Feeding-Stuffs** DURING THE YEARS 1914-18.

Description.	1914.	1915.	1916.	1917.	1918.
	£ s. d.	£ s. d.	£. s. d.	£ s. d.	£ s. d.
Linseed Cake—Home	7 15 0	11 10 0	13 17 6	18 16 3	19 0 0
Do. —Foreign	7 10 0	11 0 0	13 10 0	18 10 0	19 10 0
Decorticated Cotton Cake	8 7 6	9 12 6	14 0 0	18 15 0	19 15 0
Undecorticated Cotton Cake—Egyptian	5 12 6	7 5 0	11 10 0	16 5 0	15 0 0
Undecorticated Cotton Cake—Bombay	4 7 6	7 0 0	11 5 0	15 15 0	...
Palm-nut Kernel Cake	6 10 0*	7 0 0*	10 5 0	13 10 0 (Carr. paid)	13 15 0
Bran—Broad	6 10 0	8 7 6	10 5 0	15 7 6	13 0 0 (Mill offals)
Thirds or Sharps	6 0 0	7 5 0	9 10 0	14 17 6	13 0 0
Dried Brewers' Grains (bags included)	5 0 0	7 0 0	9 0 0	13 18 9	14 0 0
Bean Meal	8 0 0	11 5 0	13 5 0	18 5 0	27 15 0†
Maize Meal	6 5 0	9 0 0	12 17 6	17 13 9	25 10 0*
Crushed Linseed	14 10 0	16 0 0	25 0 0	27 0 0	35 0 0†
Treacle	5 5 0	5 10 0	11 0 0	16 7 6	28 0 0†
Fish Meal	9 10 0*	11 0 0*	12 0 0	14 10 0	19 2 6†

* From Trade Journals.

† From Board of Agriculture Returns. Bean Meal, Treacle, and Fish Meal were not controlled. Very little Maize Meal was available for stock-feeding.

Note.—The above prices for 1914-17 are based upon the Schedule drawn up in February each year by the Highland and Agricultural Society of Scotland, and refer to cash prices current in that month for lots of 2 tons, including bags gross weight, at Leith and Glasgow, without carriage. The prices given for 1918 are the maximum prices by order for 2-ton lots *ex* warehouse. Bean Meal rose steadily during 1918 until it reached a maximum of about £46 per ton, but Brazilian Beans were available at about £33 per ton throughout the year.

TABLE XVI.—Average Prices per Pound of various Classes of **Wool** grown in Scotland during the Years 1914-1918.

Class.	1914.*	1915.†		1916.‡	1917.‡	1918.‡
	d.	*d.*		*d.*	*d.*	*d.*
Cheviot Hog, North, washed	14¾	21¾	Aver. for North & Border.	20	22¼	23¾
,, ,, unwashed	12	18¼		16¼	18	19¼
Cheviot Ewe, North, washed	12½	21½		17	18¾	20
,, ,, unwashed	10¾	17¾		14½	16¼	17¼
Cheviot Hog, Border, washed	13½	...		18¼	20¼	21¾
,, ,, unwashed	11	...		15	16½	17¾
Cheviot Ewe, Border, washed	12¼	...		16½	18½	19¾
,, ,, unwashed	10¼	...		13¾	15½	16½
Half-bred Hog, washed	12¾	21		17¼	19¼	20½
,, unwashed	10½	17½		14¼	16	17
,, Wether, washed	12½	20¼	Aver. ewe & wether	17	18¾	20
,, ,, unwashed	10½	17¼		14¼	15¾	16¾
,, Ewe, washed	12¼	...		16¼	18½	19¾
,, ,, unwashed	10¼	...		13¾	15½	16½
Cross Hog and Ewe, washed	10½	16		14¼	15¾	16¾
,, ,, unwashed	9½	14½		12¾	14¼	15¼
Blackfaced Hog and Ewe, washed	9½	...		12¾	14¼	15¼
,, ,, unwashed	8½	10¾		11½	12¾	13½

* June-July prices. † July prices. ‡ Maximum Government prices.

TABLE XVII.—Acreages of certain Crops and Numbers of Live Stock in England, Wales, and Scotland for (*a*) Average of Five years, 1871-75, and (*b*) 1914.

Description.	England.		Wales.		Scotland.	
	Average of 1871-75.	1914.	Average of 1871-75.	1914.	Average of 1871-75.	1914.
Total acreage under crops and grass *	23,912,418	24,367,509	2,652,483	2,746,495	4,560,825	4,786,181
Permanent pasture	10,216,981	14,061,042	1,581,558	2,054,708	1,084,983	1,490,694
Arable land	13,695,437	10,306,467	1,070,925	691,787	3,475,842	3,295,487
Wheat	3,284,415	1,770,470	119,844	37,028	122,513	60,521
Barley (including bere)	1,953,388	1,420,346	161,650	84,425	252,105	194,109
Oats	1,418,808	1,730,091	245,486	199,535	1,007,339	919,580
Potatoes	335,011	436,172	47,018	25,449	167,880	152,318
Turnips and swedes	1,555,128	989,523	70,201	55,571	503,709	430,608
Horses †	988,715	979,512	120,789	134,459	178,652	182,217
Cows and heifers in milk or in calf	1,554,865	2,184,615	257,105	299,605	392,252	453,703
Other cattle	2,499,209	2,934,830	374,607	458,894	735,085	761,271
Sheep	18,717,511	13,651,965	2,911,385	3,607,729	7,161,122	7,025,820
Pigs	2,100,314	2,259,951	218,410	221,530	166,148	152,768

* Not including mountain and heath land.
† Including all horses for agricultural purposes.

TABLE XVIII.—Average Prices of British Corn per Imperial Quarter in England and Wales for (*a*) Average of Five Years, 1871-75, and (*b*) 1914.

Grain.	Average of 1871-75.	1914.
	s. *d.*	*s.* *d.*
Wheat	54 8 per quarter.	34 11 per quarter.
Barley	39 5 „	27 2 „
Oats	26 3 „	20 11 „

TABLE XIX.—Quantities and Values of certain Commodities Imported into the United Kingdom (*a*) for Average of Five Years, 1871–75, and (*b*) in 1914.

Description.	Quantities.		Values.	
	Average of Five Years, 1871–75.	1914.	Average of Five Years, 1871–75.	1914.
	cwts.	cwts.	£	£
Beef	253,770	9,677,966	510,618	23,265,104
Mutton	...	5,261,764	...	11,594,762
Bacon, Ham, and Pork	2,531,446	7,059,253	5,824,859	23,951,836
Butter	1,368,022*	3,983,921	7,494,977*	24,012,926
Cheese	1,348,805	2,423,872	3,925,673	7,966,194
	Thousands.	No. of gt. hun.		
Eggs	602,863	17,905,285	2,075,646	8,653,004
	cwts.	cwts.		
Wheat	43,756,957	103,944,543	26,154,843	44,741,473
Wheat Meal and Flour	5,390,536	10,059,429	4,798,166	5,548,238
Maize	19,662,646	39,047,107	7,481,945	11,763,341
Maize Meal	7,320	232,469	12,021	78,895

* Includes margarine.

Also imported—Average 1871-75 . . . { 215,990 live cattle, value £3,558,9 / 864,516 „ sheep „ 1,815,06 / 74,040 „ pigs „ 239,54

And in 1914 . . . { 2,234 cattle, value £46,295 / 1,707 sheep, „ 3,000

TABLE XX.—Populations of British Isles in 1871, 1911, and 1914

	1871.	1911.	1914.
England and Wales	22,712,266	36,070,492	36,960,684†
Scotland	3,360,018	4,760,904	4,747,167†
Ireland	5,412,377	4,390,219	...
United Kingdom*	31,845,379	45,370,530	46,089,249

* Includes "Islands." † Official estimate.

APPENDIX II.

STATEMENT OF **Maximum Producer's Prices** FIXED FOR VARIOUS SCOTTISH FARM PRODUCTS DURING THE YEARS 1917-1918.

A. GRAIN.

1916 *Crop*,—for Sales after 16th April 1917.

	s.	d.		
Wheat, . .	81	11	per qr.	
Barley, . .	72	10	,,	
Oats, . . .	59	3	,,	

1917 *Crop*,—

Wheat, . .	73	6	,,	for delivery before 1st Dec. 1917, up to
and Rye, .	77	9	,,	,, after 1st June 1918.
Barley, . .	62	9	,,	
Oats, . . .	44	3	,,	,, before 1st Dec. 1917, up to
	48	6	,,	,, after 1st June 1918,

plus 3s. per qr. for Oats for milling.

1918 *Crop*,—

Wheat, . .	75	6	per qr.	for Sales before 1st Oct. 1918, up to
and Rye, .	76	6	,,	,, after 1st June 1919.
Barley, . .	67	0	,,	
Oats, . . .	47	6	,,	for Sales before 1st Oct. 1918, up to
	52	0	,,	,, after 1st June 1919,

plus 3s. per qr. for Oats for milling.

Note.—(1) Quarter of Wheat=504 lbs.; of Barley=448 lbs.; of Oats=336 lbs.
(2) Inferior samples were subject to certain reductions.
(3) Above prices did not apply to grain sold expressly for seed.

B. POTATOES (*a*) SEED.—Grown in Scotland.

1916 *Crop*,—
After 22nd January 1917.—£9-£12 per ton f.o.r. or f.o.b. according to variety. [Great Scott, £14.]
After 24th February 1917.—£11-£12 per ton f.o.r. or f.o.b. according to variety. [Great Scott, £14.]
After 1st April 1917.—£13-£14 per ton f.o.r. or f.o.b. according to variety. [Great Scott, £16.]

1917 *Crop*,—

	f.o.r. or f.o.b.
King George V., Great Scott, Lochar, Templar, .	£9, per ton.
British Queen, Royal Kidney, Pioneer, Queen Mary,	£7, 10s. ,,
Evergood, ...	£7, 5s. ,,
Other Varieties, ...	£6, 15s. to £7, ,,

1918 *Crop*.—No prices fixed.

(*b*) WARE.

1916 *Crop*,—		Maximum price per ton f.o.r. or f.o.b.
For delivery	Jan.-Feb. 1917,	£8
,, ,,	Mar.-Apr. 1917,	£8, 10s.
,, ,,	May-June 1917,	£9
Modified on 1st Feb. 1917 to ,, ,,	up to 31st Mar. 1917,	£9
,, ,,	after 31st Mar. 1917,	£10

1917 *Crop*,— Minimum price per ton f.o.r. or f.o.b.

For delivery	15th Sept.-31st Jan. 1918,	£5, 15s.
„ „	Feb.-Mar. 1918,	£6
„ „	Apr. and onwards, 1918,	£6, 10s.
Modified to „ „	after 15th Sept. 1917,	minimum, £6 per ton. maximum, £6, 10s. „
Modified to „ „	between 15th Apr. and 14th May 1918,	minimum, £6, 10s. „ maximum, £7 „
„ „	after 14th May 1918,	minimum, £7 „ maximum, £7, 10s. „

Note. — Owing to the abundant crop and in order to encourage consumption, farmers were allowed to sell below the minimum of £6 per ton (later £6, 10s. and £7 per ton), the difference between the price received and the minimum price being made up by the Government, subject to "base prices" fixed at various times for different districts.

1918 *Crop*,—

Delivery in Nov.-Dec. 1918.—A maximum of £6, 15s. per ton for potatoes used in Scotland. A fixed price of £6 per ton for potatoes exported.

„ „ Jan.-Feb. 1919.—Above prices increased 10s. per ton, and thereafter increased 10s. per ton per month up to £8, 15s. and £8 respectively for May and onwards.

C. HAY AND STRAW.

1916 *Crop.* For Sales after 27th February 1917.

Hay	£5	2	6	per ton.
Oat Straw	2	15	0	„
Wheat Straw	2	10	0	„

1917 *Crop.* Maximum Prices Per Ton.

	Hay.			Oat Straw.			Wheat Straw.		
Delivery up to 31st Dec. 1917	£5	10	0	£3	0	0	£2	10	0
„ „ 31st Jan. 1918	5	12	9	3	1	6	2	11	3
„ „ 28th Feb. 1918	5	15	6	3	3	0	2	12	6
„ „ 31st Mar. 1918	5	18	3	3	4	6	2	13	9
„ after 31st Mar. 1918	6	1	0	3	6	0	2	15	0

1918 *Crop.* Maximum Prices.

Hay	£8	0	0	per ton,	with 10 per cent per annum added as from 1st January 1919 for hay delivered after 31st December 1918 in lieu of the shrinkage allowance shown in the gradation of the 1917 scale.
Threshed Hay	5	0	0	„	
Oat and Barley Straw	3	15	0	„	
Wheat Straw	3	0	0	„	

Note.—In each case prices are f.o.r., but not including cost of baling or trussing.

D. FAT CATTLE AND BEEF.

In September 1917, maximum wholesale prices for home-killed beef were fixed as follows :—

Sept. 1917,	8s. 8d.	per stone of 8 lbs., not including offals.
Oct. "	8s. 4d.	
Nov. "	8s.	
Dec. "	8s.	
Jan. 1918,	7s. 4d.	

In Jan. 1918, maximum price was raised to 8s. per stone.
In Mar. 1918, " " 8s. 2d. per stone.
In Dec. 1917 the *Grading Scheme* for cattle was introduced, under which all fat cattle were to be sold through a public market, and maximum net prices per live cwt. to the farmer were fixed as under :—

	Bulls, bullocks, and heifers.		Cows.	
Grade 1.	56 per cent and over,	75s.	52 per cent and over,	70s.
" 2.	52-56 per cent,	70s.	46-52 per cent,	62s.
" 3.	48-52 per cent,	65s.	42-46 per cent,	53s.
" 4.	Under 48 per cent,	as valued.	Under 42 per cent,	as valued.

In May 1918 the price for Grade 4 was fixed at 55s. and 45s. respectively. These prices were based upon a price of 1s. 2¼d. per lb. carcase weight, including value of offals.
In April 1918 the maximum price of cattle sold on a deadweight basis (*i.e.* not graded) was fixed at 9s. 6d. per stone of 8 lbs. carcase weight, or 1s. 2¼d. per lb., including value of offals.
In July 1918 it was announced that the maximum price of graded cattle was to be raised by 1s. per cwt. live weight in Dec. 1918, and in Nov. 1918 a further announcement was made fixing the price for Dec. 1918 at 77s. per live cwt. for Grade 1, bullocks, &c., other grades and classes in proportion. At the same time the price on a deadweight basis was raised to 1s. 2¾d. per lb., including offals.

E. FAT SHEEP AND MUTTON.

In Sept. 1917 the maximum wholesale price for home-killed mutton was fixed at 8s. 8d. per stone of 8 lbs., not including offals.
In Jan. 1918 this price was increased by ¾d. per lb.
In Jan. 1918 it was announced that all fat sheep were to be sold through a public market and to be valued at the rate of 1s. 2¼d. per lb. of estimated carcase weight, plus value of skin, minus 1s. 6d. per head, *or*, to be sold on a deadweight basis at the rate of 1s. 2¼d. per lb., plus value of skin, minus ¼d. per lb.
In July 1918 the price was raised by 1s. per head for Nov. 1918 and by 2s. per head for Dec. 1918.
In Nov. 1918 this was varied so that the increase ranged from 6d. to 1s. 8d. per head in Nov. and from 1s. to 3s. 4d. per head in Dec., according to the weight of the sheep. At the same time the price on a deadweight basis for Dec. was raised to 1s. 2½d. per lb.

F. FAT PIGS AND PORK.

In Sept. 1917 the maximum wholesale price for home-killed pork was fixed at 9s. 6d. per stone of 8 lbs., not including offals, or 10s. per stone if offals included.

In March 1918 this price was raised to 10s. 8d. per stone, excluding offals.
In Nov. 1917 the maximum price for fat pigs was fixed at 18s. per score of 20 lb. live weight, less 2s. 6d. per pig.
In March 1918 this price was raised to 21s. per score, or 28s. per score carcase weight, including offals, or 26s. 9d. per score carcase weight, excluding offals.

Note.—In all cases where the price refers to "carcase" weight, whether "including" or "excluding" offals, the weight does not include the weight of the offals. It is the *value* of the offals which is included or excluded, as the case may be.

New Scale of Cattle and Sheep Prices.

Cattle:

	Graded Price per cwt. live weight.	For sale on deadweight basis. Price per lb., offals included.
Nov. 1918.	75s. (standard price.)	1s. 2¼d. (standard price.)
Dec. 1918.	Increase of 2s. per cwt. all grades except 4.	1s. 2¾d.
Jan. 1919.	" 3s. " "	1s. 3d.
Feb. "	" 5s. " "	1s. 3¼d.
Mar. "	" 6s. " "	1s. 3¾d.
Apr. "	" 8s. " "	1s. 4¼d.
May "	" 10s. " "	1s. 4¾d.
June "	" 10s. " "	1s. 4¾d.
July "	" 7s. " "	1s. 4d.
Aug. "	" 4s. " "	1s. 3¼d.
Sept. "	No change in prices.	1s. 2¼d.

Sheep: For graded sheep the price per head for sheep worth between 60s. and 70s. each was increased 1s. in Nov. 1918, 2s. in Dec. 1918, then rising to 10s. in May 1919, and falling to 4s. in July 1919. Sheep worth more than 70s. or less than 60s. per head to be increased in proportion according to scale.

For sheep sold on deadweight basis price per lb. (including offals) was 1s. 2½d. in Dec. 1918, rising to 1s. 4½d. in May 1919, and falling to 1s. 2d. in August 1919.

G. MILK.—By Order of 20th Nov. 1916, it was stipulated :—

(1) That the producer's price was not to be raised above that received at 15th November 1916.
(2) That the producer's price was not to be more than 6½d. per gallon above that received in 1913 for milk sold under an agreement to supply not less than certain quantity, and not more than 5½d. per gallon above the 1913 price for other milk—the comparison being made from month to month.

By Order of January 1917.—First proviso above was withdrawn. The second proviso was in force up till September 1917.

Winter 1917-18.

Maximum prices to the producer were fixed as follows :—
Oct., 1s. 5d.; Nov., 1s. 7½d.; Dec. to March, 1s. 9d ; and April, 1s. 8d. per gallon.

Summer 1918.

Maximum prices to the producer were fixed as follows :—
May, 1s. 2d.; June-July, 1s.; Aug., 1s. 2d.; and Sept., 1s. 4d. per gal.
Later, the May price was raised to 1s. 6d., and on 8th June the prices from 9th June to 30th Sept. were raised 4d. per gallon.

Winter 1918-19.

Maximum price to the producer was fixed at 2s. 3d. per gallon for period 1st October 1918 to 30th April 1919.

Note.—Above prices include cost of delivery to buyer's premises or to producer's railway station.

H. CHEESE.

Maximum prices of Cheddar and Dunlop (including delivery):—
31st August 1917.—Cheddar, 132s. per cwt.; Dunlop, 130s. per cwt.
1st October 1917.—142s. per cwt. for delivery after 1st Oct. 1917.
28th March 1918.—Delivery before 31st March 1918, 1s. 6d. per lb.
„ 1st April to 31st May, 1s. 6d. „
„ after 1st June, 1s. 3½d. „
13th May 1918.—Made before 11th May, . . . 1s. 6d. „
„ after 11th May, . . . 1s. 4d. „
On account of the increase in the price of Milk, the price of Cheese made on or after 9th until 30th June was raised to 1s. 5d. per lb.
Later, the price of July-made Cheese was fixed at 1s. 7d. per lb., and of Cheese made after 31st July at 1s. 8d. per lb.

I. BUTTER.

2nd Oct. 1917.—Maximum prices for farmer's Butter fixed as follows :—
In bulk *ex* the farm, ... 230s. per cwt.
In rolls, or bricks, or prints, 244s. to 248s. 8d. „
For unsalted Butter, . . . 3s. per cwt. more.
For farmer's Butter sold retail, maximum of 2s. 6d. per lb.
31st July 1918.—Maximum prices for farmer's Butter fixed as follows :—
In rolls, bricks, prints, or pats, . 2s. 1½d. per lb.
Where sold retail, ... 2s. 4d. „
After 18th Oct. 1918.—The above prices were raised 2d. per lb.

J. EGGS.

2nd December 1918.—Maximum price to the producer for "fresh" Eggs of not less than 1½ oz. each was fixed at 5s. per doz.; for small Eggs at 2s. 8d. per doz.

FORESTRY AND RURAL POLICY.

By Sir JOHN STIRLING MAXWELL of Pollok, Bart., Assistant Controller of Timber Supplies (Scotland).[1]

Few genuine students of rural policy have escaped the conclusion that in certain districts the only sure base for development will be found in afforestation. In those who have travelled abroad this conclusion has been greatly strengthened by observing the special care bestowed on forestry by other States and its striking results. Ninety-nine years ago it was pointed out in these 'Transactions'[2] that "France has in her public forests a source of revenue which is almost unknown in this country," that "there are many extensive tracts of land in almost every corner of the kingdom proper for raising wood," that "the time is arrived at which it is become the indispensable duty of every individual who has it in his power to lend his aid in clothing the naked waste." The argument then, as now, was that land too steep and too poor for cultivation, such as prevails over a great part of Scotland, cannot support an increased population unless new values are created, and that in such localities sylviculture is the only agency which can create new values. If this argument truthfully states the case, why has so little progress been made in the century which has elapsed since it was first propounded in these pages? It is vain to speculate about the future till this question has been answered.

Limitation of Forestry in Scotland.

The obstacles which have hitherto impeded the progress of forestry in this country may be classified under the following heads:—

(1) The poor quality and early disappearance of our natural forests.

(2) The abundant though temporary supplies of cheap timber from virgin forests of other countries.

(3) An ignorant and neglectful administration.

The situation will be better understood if each of these causes is examined in detail, and this can most conveniently be done in narrative form.

[1] The accompanying photographs, illustrating types of wood felled during the war, are by Mr Walter Bell.

[2] Vol. v. Part II. "Essay on Woods and Plantations," by the Rev. G. J. Hamilton; written in 1811, but mislaid by the Editor, and not printed till 1820.

Natural Forests.

It must be remembered that nine-tenths of the demand in civilised countries is for coniferous timber. Only three conifers, the Scots pine, the yew, and the juniper, found their way back to what are now the British Isles after the last Ice Age; and since the rifle has replaced the bow, only one of them, the Scots pine, yields timber of any importance. This native tree is naturally regarded with affection, and on certain soils it may be the best tree that can be grown. But there are large areas in the British Isles where it grows very poorly. At best, in rapidity of growth and quality of timber, it is inferior to other species which are found on the continent of Europe, not to mention the New World. The disappearance of our natural pine forests, which once covered a large proportion of the Highlands, is still a mystery to historian and naturalist. No doubt they owe their destruction largely to the hand of man, and especially to that of the iron-smelter and grazer of cattle, but they have also perished over large tracts from decay and failure to reproduce themselves. This must be evident to any one who compares the flourishing pine-woods of Strathspey or Nairn with the forest remnants of the western watershed, where the roots and stems, embedded in the peat, prove that the last generation of pines, much as we regret their beauty and shelter, grew under conditions so uncongenial that their timber was of little consequence. For better or worse these forests had, for the most part, vanished before the forester discovered how they could be restocked with the better species which nature had denied us.[1]

Early Plantations.

The plantations of the seventeenth century were numerous but small in scale.[2] In the eighteenth century, and especially in the latter half, when building and improvement were general, the want of coniferous timber began to make itself felt, especially in Scotland, where all timber was scarce. Though timber was already imported on a considerable scale, the low cost of planting and relatively high cost of transport promised that home-

[1] The hardwood forests of England fared better, in spite of their slow growth and their occupation of land fit for the plough. The needs of house- and ship-building, of fuel and tanning, compelled some measure of protection. In a few large tracts and innumerable small patches they survive to this day, and account for a large proportion of the 1,884,000 acres of wood which England and Wales to-day possess.

[2] 'Transactions of R. Scottish Arboricultural Society,' vol. xxvi. "Early Tree-Planting in Scotland," by Hugh Boyd Watt.

Fig. 1.—*Scots Pine. Langlee, Jedburgh. Age* 120 *years. Height* 90 *ft. Elevation* 500 *ft.*

grown timber would more than hold its own. The careful planning and long views which forestry demands were congenial to the typical laird of that day, who looked ahead and loved order in everything, from the boldest scheme of improvement to the neat Tuscan bookcase in which he kept the plans of his new farms and the early numbers of these 'Transactions.' Plantations on an extensive scale were a prominent feature of the rural policy of that time. They followed in the wake of agriculture, being confined to the districts in which the advance of that industry made money available for investment. Some of these woods[1] were still standing when war was declared, and have furnished valuable material for its prosecution. In these woods larch and spruce were employed almost as much as the native pine. The policy of planting was notably encouraged in the first half of the nineteenth century by the premiums and medals awarded by the Highland Society. The plantations which won these distinctions have been of the utmost importance in furnishing timber during the war, and many of them, including those on the estates of Ardgour, Cortachy, Skibo, Balnagown, Seafield, Cawdor, and Fairburn, have been acquired by the Government. In others the timber-merchants have had their mills. The woods themselves and the literature of the period show that Scots foresters were then well abreast of Continental countries.

In one respect, sufficiently important to justify a slight digression, Scotland was ahead of them. The work of Continental foresters was in the main confined to the maintenance and improvement of their natural forests. The Scots foresters had to make new woods. They had also to import new species. They deserve more credit than they have received for the courage and intelligence with which they tackled the latter part of their work. So far as the writer knows, Europe can show no parallel to their performance in this respect. In the essay to which allusion was made above, the author was commissioned by the Highland Society to embody an epitome of sylvicultural knowledge in the opening years of the nineteenth century, which may be taken as the high-water mark of Scots forestry. It was there boldly stated that the native pine must be "assigned to a secondary place only among the trees most deserving of culture in Scotland." This was no hasty generalisation, but a verdict deliberately published after careful study of the native pine and its local variations.[2] The requirements and limitations of its chief rival, the

[1] Birkenside (Lord Lothian), Drummond Hill (Lord Breadalbane), and Craigvinean (Duke of Atholl), are examples.

[2] Earl of Haddington, Treatise on Forest Trees, Edinburgh, 1765. Observations on Timber-Trees by Agricola, Edinburgh, 1777—see quotation from James Farquharson of Invercauld, p. 104.

larch, were perfectly understood, as will be seen in James Anderson's 'Essays,'[1] and in the Notes of John, Duke of Atholl.[2] It is sad to think of the costly mistakes recent planters have made with these trees while the dust gathered on such books in their libraries. Afforestation had been definitely checked by the importation of cheap timber, before the seed of the best American conifers reached this country in sufficient quantities to admit of experiments on a commercial scale, but the interest in new species has persisted in parks and gardens. Notable plantations of Douglas fir were made in a few places in the 'sixties and 'seventies,[3] and within the last twenty years sufficient experiments have been made to test thoroughly the commercial possibilities of all the American species best suited to our climate, as well as the Japanese larch. Other new species recently received from the Far East are still in their infancy, but they have been planted in considerable numbers, and some promise well. No doubt this tendency to adopt trees from other countries is based on the peculiar merit of our climate and the poverty of our indigenous forest flora, but it owes a great deal to the enterprise of our foresters. This will be apparent to readers who know the modest experiments in this direction with which Continental foresters are satisfied. The contrast was brought home recently to the writer by a visit to Les Barres, near Montargis, where the founder of the great seedsmen's firm of De Vilmorin brought together a famous collection of exotic trees, now the property of the French nation. Though a magnificent stand of Corsican pine, planted in 1827, has surpassed all the many varieties of Scots pine cultivated in this collection, this tree does not seem to have been seriously tried even in the neighbouring forests, where the Scots pine shows a poor growth.

Home-grown Timber replaced by Imported Timber.

Scots planters of the eighteenth and early nineteenth centuries expected and obtained a good return for their work, but a change was at hand. In some cases, before the final crop was ready for the axe, iron steamships, bringing cheap timber of excellent quality to our numerous ports from the virgin forests of other countries, had knocked the bottom out of British forestry as a commercial undertaking. The reader need not fear that he is going to be asked to choose between free trade and protection. Let us accept the cheap imports as a blessing

[1] 'Essays relating to Agriculture and Rural Affairs,' by James Anderson, LL.D. Edinburgh, 1796. Vol. iii., pp. 370-475.

[2] 'Transactions,' vol. ix., 1832.

[3] *E g.*, Taymount, Perthshire; Benmore, Argyllshire; Gairloch, Ross-shire.

while they last. Let us also realise that this phase is one which must soon pass, because the sources of supply are nearing exhaustion. We shall return to this subject later.

Government Neglect.

It is at this critical period, when cheap imports had for the time being rendered British woods unremunerative and in a sense unnecessary, that intelligent guidance from the State would have been of the greatest value. Unfortunately foresight is rare among the statesmen who serve democracies. Even France has only had one Colbert, and he belonged to the old order. We are still waiting for our Colbert. The question of the country's future supplies of timber was left completely to chance. Had the precarious character of these supplies been realised, measures might have been taken to keep the industry alive with a view to its expansion when imports showed signs of failing. Those signs—a rise in price and decline in quality—have not been wanting. They are recorded in the official figures of the Board of Trade, but their significance has never been brought home to the Government by the official guardians of forestry. In other countries forestry receives the same care from the State as agriculture. Had that been the case here, the home production would have been helped to hold its own with foreign competition by more careful choice of species, better management of growing woods, regular marketing and grading of timber. The woods would have been properly surveyed and their contents accurately measured; demonstration areas and schools for forest apprentices would have been established In the years immediately preceding the war, when the value of timber was rising and the value of grazing-land had fallen abnormally low, the opportunity would have been seized to make a survey of afforestable ground and secure sites for model forests, where sylviculture as a factor in rural economy and land settlement could be studied in practice. All these measures were advocated in the pages of these 'Transactions.' They were urged by practical foresters, in season and out of season, through their societies and in the Commissions and Committees which successive Governments appointed to keep them quiet. They had the warm support of the few expert foresters in the Government service. Unfortunately such desires awoke no echo in the higher officials with whom the decisions rested. Readers of Dr Day's admirable book on 'Public Administration in the Highlands and Islands'[1] will remark how completely

[1] 'Public Administration in the Highlands and Islands of Scotland,' by J. P. Day, B.Sc., D.Phil., &c. University of London Press, 1918.

forestry has been neglected as a means of supplementing the wealth of these poor districts, and so enabling them to support

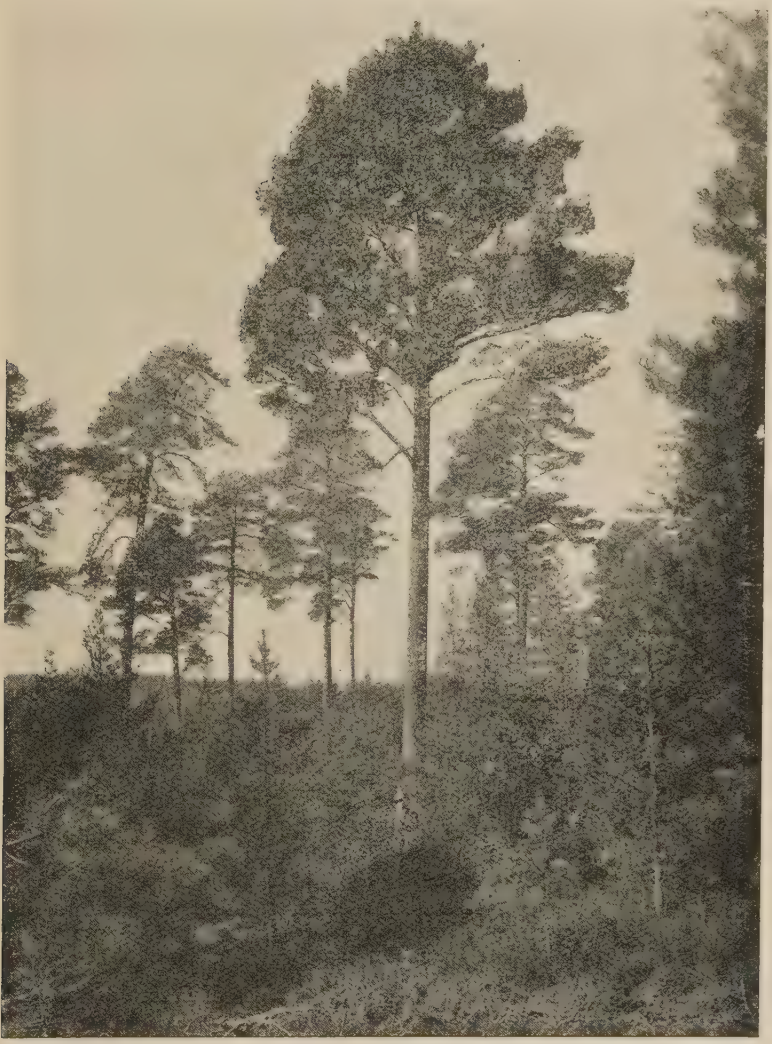


Fig. 2.—*Natural regeneration of Scots Pine before removal of standards, Grantown-on-Spey. Elevation 700 ft.*

a larger population, or the same population in greater comfort. Possibly in the islands, where congestion is most acute, the field for afforestation may be limited, but the question does not appear to have been investigated. On the mainland the oppor-

tunities are undeniably great, and might have afforded a permanent remedy for the ills with which the Government was confronted, at less cost than the palliatives actually provided. In Dr Day's book of 400 pages, seven lines suffice to record the efforts of the Government in regard to forestry. His impartial statement may be quoted in full. "The duty of promoting the interests of forestry in Scotland was placed on the new Board of Agriculture in 1911, and the Board, aided by the Development Commissioners, appointed five forest officers to assist and advise individuals in planting operations. An Advisory Committee on Forestry was also appointed, and a demonstration area was to be acquired." He might have added that the demonstration area has never been acquired, and that the Advisory Committee has only been called together once in the last five years. Responsibility, so far as Scotland is concerned, has for the last seven years been divided in paralysing fashion between the Development Commission and the Board of Agriculture. Mr Lloyd George deserves credit for the powers and funds which he persuaded Parliament to bestow on the Development Commission to promote afforestation, but little use was made of them. The decisions have lain with men engrossed with other matters, with little interest in forestry, and deficient in expert knowledge. It is unnecessary to record their names here, since these 'Transactions' will be read long after they are forgotten. They have left no mark on forestry but the mark of neglect, which it may be hoped will soon disappear under a better administration.

Under these conditions things went from bad to worse. The total lack of organisation caused home-grown timber to be sold far below its real value. While imported railway sleepers cost 3s. 6d. to 4s., home-grown sleepers of equal quality could not be sold for more than 2s. 6d. Woods for the most part ceased to have any value except for shelter, beauty, and sport. In unfavourable situations, the prices offered barely paid for the cost of felling, and timber remained standing till it rotted and dropped to pieces. Where the timber was of good quality and accessible, large areas were cleared, but at prices which did not justify replanting. Deforestation thus proceeded apace. A survey made[1] last autumn (1918) disclosed the fact, apparently unknown to the official guardians of forestry, that the area deforested in Scotland before the war was more than 60,000 acres. The owners of wood certainly showed a lack of enterprise and co-operation, but they naturally shrank from investing such resources as they possessed in ventures from

[1] By the Timber Supply Department of the Board of Trade.

which the return was both slow and doubtful. If any industry ever required encouragement from the State, it was forestry during this critical period.

Effect of the War.

It is impossible to say how long this state of things would have continued, if the war had not intervened with its sharp reminder that timber is one of the necessaries of national life and an essential element in military operations. The Reconstruction Committee reckons that in the years 1915 and 1916 the National Exchequer incurred a loss of £37,000,000 through dependence on imported timber.[1] The tonnage absorbed and the effect on the exchange were also serious considerations. These facts and the activity of the German submarines decided the Government to rely mainly on home-grown timber for the remainder of the war. The cost was still about half that of the imported timber, even though the price of standing timber had risen nearly 70 per cent, and the cost of conversion had been largely increased by the high rates paid for wages and machinery and the ample margin of profit allowed to the timber merchants under the Order which controlled prices. The maximum prices for standing timber were fixed at 1s. 4d., 11d., and 10d. per cubic foot for larch, Scots pine, and spruce respectively. The prices for standing hardwoods were fixed so low that choice trees brought their owners less than they had done before the war.[2] At the time of the Armistice the production of sawn timber in Scotland was at the rate of 38,000,000 cubic feet per annum, of which more than a fifth was produced in the Government mills. In addition, sufficient pitwood was produced to supply the whole demand of the Scots mines and send considerable contributions across the Border. Without this timber the war could not have been carried on. In 1916 and 1917 a great part of the wants of the armies in France was supplied from Scotland, but from the summer of 1917 onwards these armies were supplied, under Lord Lovat's direction, from the French forests, and the whole production of home timber was absorbed by the Government service including the mines and railways. The Scots timber-merchants displayed the utmost energy and resource in increasing their output under very difficult conditions, and worked loyally with the depart-

[1] The price of the timber imported in 1915 was £13,000,000 in excess of pre-war prices, and that imported in 1916 £24,000,000 in excess.

[2] This anomaly, which affected England more than Scotland, arose from the difficulty of discriminating in artificially controlled prices between different qualities of the same species. It remained unremedied through the reluctance of landowners to press their own interests during the war.

ment which, first under the Board of Agriculture, then under the War Office, and finally under the Board of Trade, was charged with the duty of organising timber supplies. This is not the place to describe the work of that department, but the writer desires to record that the success of the Scots branch was mainly due to the able direction of Colonel J. D. Sutherland, who organised it, and of the late Mr S. P. Sinclair, who succeeded him as Executive Officer. The department had later the advantage of an enlightened and far-sighted chief in Sir James Ball, the Controller of Timber Supplies. The work in Scotland was divided between some forty mills of the ordinary Scots type under the direct control of the Department and a number of large portable mills brought from Canada and run by fifteen companies of the Canadian Forestry Corps. Each mill had the necessary felling parties and transport attached. The departmental operations show a substantial profit. The military organisation of the Canadian operations rendered them somewhat expensive, but their rapid output was of very great service during the most critical period of the war. The Forestry Corps drew its pay from the Canadian Government and its services thus formed a welcome and timely gift from the Dominion to the Mother Country. Owners of standing timber recognised without exception that it was up to them to supply the timber required, and their most cherished woods, on which in some cases the beauty of their homes depended, were readily placed at the disposal of the Government at prices representing a very low return on the capital invested in them.

The full effect of the war on the timber reserves of Scotland cannot yet (August 1919) be measured, since war conditions still persist, and will continue until imports arrive more freely. The area clear-felled in Scotland since August 1914, or now in process of felling, may be reckoned at 130,000 acres. This, with nearly 70,000 acres felled before the war and not replanted, will make a gap of 200,000 acres in a total woodland area of about 1,100,000 acres. Assuming the woods to be worked on an average rotation of 60 years, this would represent the annual fellings of nearly 11 years. If the reckoning were confined to coniferous woods the toll would appear heavier. On the other hand, it must be remembered that the area of mature timber in 1914 so far exceeded its proper ratio to the younger classes that the woods could not have been brought under regular working plans without heavy fellings, that many of the crops felled were unsatisfactory, and that not all the areas cleared are worth replanting. Still the fact has to be faced that the heavier stands of mature timber have gone, that a good many

Fig. 3.—*Scots Pine. Orton (Feith Wood), Morayshire. Age* 115 *years. Height* 65 *ft. Elevation* 600 *ft.*

promising plantations have been sacrificed for pit-wood, and that the reserves of timber remaining are dangerously slender.[1]

Report of Reconstruction Committee.

The war has brought to the forestry problem the solution for which it has been so long waiting. It led to the appointment by the Reconstruction Committee of a Sub-Committee on Forestry, whose report, completed in the summer of 1917, laid down for the first time a definite forest policy for the United Kingdom. The reader, if he has followed these pages so far, will have no difficulty in understanding their proposals. The needs of national defence were the immediate occasion for these proposals, and determined their scale. That aspect of the case need not detain us here. But the report shows clearly that the proposal might have been based quite as firmly on the peaceful considerations of rural policy, or the necessity for safeguarding the nation's supplies of timber in view of the world's increasing consumption and the depletion of its virgin forests.

Allusion has already been made to the precarious nature of our supplies from overseas, but the matter is so important that no apology need be made for pursuing the subject a little further. The following table is taken from the Reconstruction Report:—

Timber Imports, 1913.

1 load = 50 cub. ft.

	Coniferous Timber and Pit-wood in Loads.
Russia	5,196,826
Sweden	1,759,417
France	984,331
Dominion of Canada and Newfoundland	897,217
United States of America	511,351
Norway	437,106
Portugal	315,538
Germany	206,081
Spain	103,123
Small lots from other countries	20,319
Total	10,431,309 loads.

[1] The above figures are based partly on a survey made by the Timber Supply Department, Board of Trade, in 1918, to ascertain the reserves of timber available for a continuance of the war, and partly on information obtained by the same department in connection with the control of sales of standing timber and the purchases of standing timber for the Government. The survey, which was conducted by convalescent officers from Scots hospitals not specially trained in forestry, was necessarily of a very simple character, and confined to locating on the 6-in. map, (1) felled areas, (2) areas of coppice or scrub, (3) plantations under 20 years of age, and (4) woods over 20 years. Mistakes were no doubt made, but they tended to correct one another.

After examining separately each source of supply, the Committee sums up the situation as follows:—

"The United Kingdom is dependent for more than 60 per cent of its timber on the virgin forests of foreign countries, which are being steadily depleted. The proportion derived from sources within the Empire fell from 22 per cent in 1899 to 10 per cent in 1913. Every year we become more dependent on Russia, which in 1913 supplied us with nearly half our total imports. We have no means of reckoning how long the virgin forests will last, but unless they are brought under systematic management their exhaustion can only be a question of time. The arguments advanced on this subject by competent students have been supported since 1895 by a steady rise in price. The only large reserves within the British Empire are those of Canada, which are rapidly being depleted by fire. The Dominion Government has initiated measures for their protection, but the problem is both large and difficult. It is one in which the United Kingdom has a deep interest, since the Canadian reserves are the only source on which the United Kingdom can fall back if supplies from Russia fail. The arrangement prevailing before the war under which the exports from the Canadian forests were absorbed by the United States, while the United Kingdom drew its supplies from Russia, no doubt found much justification in economy of transport, but unless the Canadian forests can be adequately protected and made available in case of necessity for the United Kingdom, it is certain that the area of timber within the British Isles must be increased far beyond that recommended in the proposals made in the following pages. We commend this imperial question to the attention of the Conference meeting in London. It is urgent, because preparations made now cannot mature for many years, and unless provision is made now, either in Canada, Russia, or the British Isles, it is practically certain that the United Kingdom will find timber difficult to procure in sufficient quantities before such preparations can mature." Occurrences in Russia have lent additional force to these words since they were written.

The position of the United Kingdom as contrasted with its European neighbours is thus described:—

"Our own imports increased between 1895 and 1913 at the rate of 100,000 loads a year, and the price rose during the same period by no less than 33 per cent. No substitute has been found for coniferous timber. Every year it is used for new purposes. The amount, for instance, now converted into pulp and substitutes derived from wood fibre, including paper, is very large and rapidly increasing.

"Even countries with large and well-managed forests, such

as France, with 37,000 square miles, or Germany, with 54,600 square miles—being in each case more than half an acre per head of the total population—now find it necessary to import considerable quantities of timber. The net imports of France were reckoned in 1910 at 880,000 loads, or 6 per cent of her total consumption, those of Germany at 7,000,000 loads, or 27 per cent of the consumption. These countries, though the proportion of their imports is still small and not such as to be a cause of weakness in war, spare no effort to increase their home supplies. For the United Kingdom, with less than 5000 square miles of wood, being less than one-tenth of an acre per head, and imports amounting in the year immediately preceding the war to over 10,000,000 loads, or nine-tenths of the total consumption, the risks are many times multiplied, and the state of the world's reserves of coniferous wood becomes a very grave and very urgent consideration."

Turning now to afforestation as a factor in rural policy, the Committee makes the following remarks, which in the present writer's judgment constitute a fair statement of the case:—

"The districts which would benefit most are those which are now poorest and most backward, such as the hilly regions of northern England, Wales, and Ireland, the Border Country and, most of all, the Highlands of Scotland. No one disputes that large areas in these districts now devoted to sheep or deer ought, if possible, to be put to more productive uses. In these tracts, now almost uninhabited, the cost of reclamation and equipment is such that no agricultural development is economically possible unless some other industry is present to help to bear the preliminary outlay on roads, bridges, &c., and provide occupations to which the small farmer can turn in winter when he would otherwise be idle and to which his family can look for employment. In certain favoured localities, sea-fishing, mines, or quarries may supply this want, but in many districts sylviculture and the industries based on it are the only agencies that can do so. The economic contrast between a valley where the hills are under wood and one where they are devoted to grazing or sport is little short of amazing. A thousand acres of hill grazing require the services of one, or at most two shepherds, and have even on the best land of that type an annual production per acre of less than ten lbs. of mutton and two lbs. of wool. The same area under forest requires the services of ten men, besides occasional labour in nurseries and young plantations, and labour employed in industries dependent on the forest, while its annual production is, at a low estimate, 1000 loads (50,000 cubic feet) of coniferous timber. When the woods extend to several thousands of acres, the new values they create become a potent factor in the development of the dis-

Fig. 4.—*Larch. Orton, Morayshire. Age* 120 *years. Height* 90 *ft. Elevation* 400 *ft.*

trict, justify the building of roads, railways, and telegraphs, and serve to support churches, schools, doctors, shops, and many of the comforts and amenities of civilisation which are out of reach of the solitary crofter.

"Forestry opens a new vista for the small holdings policy. It makes the creation of small holdings not only possible but necessary in districts where the cost of creation would otherwise be prohibitive. The small holdings will be grouped together on the best land within or near the forests so as to economise labour in the working of the holdings, to afford opportunities for co-operation in buying and selling, and to provide an ample supply of juvenile and female labour for nursery work. Families settled on new holdings in forest areas will be a net addition to the resident rural population. We believe that small holdings in connection with forestry will fulfil the following conditions which are essential to success:—

(1) The land being included in large areas acquired for afforestation can be provided at a moderate rent and free from claims for severance, &c.
(2) Sufficient land will be available for summer grazing.
(3) The character and situation of the agricultural land will be such as to give special opportunities for initiative or co-operative effort on the part of the small holders.
(4) Forestry fits in with farm work better than any other industry. The demand for labour is regular in amount and permanent in character, though sufficiently elastic to fit in with the demands of other occupations. It requires most labour in winter when the farm requires least.
(5) Forestry provides suitable employment for women and children.
(6) The holders will have opportunities of contracting for roads, fences, drains, &c., and of hiring out their horses and carts on remunerative terms.

"We think that these small holdings should, in the first instance, be equipped with the necessary buildings at the expense of the State, that they should be of a size sufficient to keep the families in food, including milk, and to provide them with work during the periods when they are not required for forest labour. They should vary in size, so that some may be large enough to keep a horse for forest work and assist in the agricultural work on the other holdings, while others consist merely of a house with garden and grazing for a cow. The object of the Forest Authority should be to create as soon as possible an independent body of workers attached by habit and

interest to forest work. It should therefore be made possible for the forest worker to acquire his holding at easy rates, and become an occupying owner or holder under crofter or other tenure should he be so inclined.

. . . . . .

"We shall investigate below—so far as it can be investigated while so many factors are uncertain—the question how far the planting of waste land is likely to prove directly profitable. We submit that this aspect of afforestation, though much discussed in this country, is not from a national point of view the most important, and that it has never been so regarded in the countries where sylviculture has been longest practised and is most valued. The direct gain or loss is relatively a small matter compared with the new values created—these values being expressed partly in terms of population and partly in terms of wealth. It is on such values that the strength of nations depends. In order to increase them it has long been the custom for the State in other countries to expend very large sums of public money either in planting for itself or in encouraging public bodies and private persons to plant. In some cases, as in the afforestation of the Landes in France, the sands and heaths in Denmark, and the high moors of Belgium, the hope of direct profit is very remote; but the fact that areas hitherto valueless have been rendered permanently habitable and productive is held to justify the initial cost, even though it may not be wholly recovered. The construction of forests is regarded in the same light as the construction of roads, bridges, breakwaters, &c., which are of definite national value, though the capital sunk in them may produce no direct return and cannot be recovered. Happily, in this country there lies between us and such difficult and costly problems a vast area of good forest soil where the results of afforestation, direct and indirect, promise to be far more encouraging."

The argument contained in the last of these paragraphs deserves particular notice. It is the only argument that can justify the State in undertaking or assisting others to undertake productive enterprises which may have to be initiated at a loss. Where such enterprises are proved necessary for the good of the nation, it is the peculiar duty of the State to launch them. Otherwise they will not be launched at all. If the reader has any doubt on this subject he should study the example (cited above) of the Landes,[1] where the French Government has converted a pestilent desert into a fruitful and

[1] See Report of Forestry Reconstruction Sub-Committee, Appendix 3. Also 'Enquête sur la reprise et le développement de la vie industrielle dans la région Landaise,' Bordeaux, 1917.

populous province, a province which, by the way, has supplied the Welsh mines with pit-wood all through the war.

Proposals of Reconstruction Committee.

We may now glance at the practical proposals of the Reconstruction Committee. They may be summed up as follows:—

(1) The care of forestry, now divided amongst several departments, to be centralised in a single Forest Authority with separate Executive departments in the three kingdoms.

(2) 1,770,000 acres to be afforested (in addition to the present woodland area). In the first ten years, 150,000 acres to be planted by the State, and 50,000 by public bodies and private individuals, assisted by grants, or by co-operation between them and the State.

(3) Assistance to public bodies and private individuals to take the form of grants equal to £2 per acre for conifers and £4 per acre for hardwoods, with the condition that the plantations are made on approved plans and maintained for thirty years.

The cost for the first ten years is estimated at £3,425,000. It may be necessary, the Committee reckons, to invest £15,000,000 altogether in this enterprise during the first forty years, after which the scheme should be self-supporting. The whole sum involved is less than half the direct loss incurred during the years 1915 and 1916 through dependence on imported timber.

These proposals were definitely adopted by the late War Cabinet. They have since received legislative sanction. An Interim Forest Authority has been appointed to make preliminary arrangements for carrying them into effect. From the Scots point of view the personnel of the Interim Authority is all that can be desired, including as it does Lord Lovat and Colonel Steuart Fothringham, practical foresters of long experience, and Mr M'Callum Scott, a member of Parliament who has shown a real interest in this subject. We have now to consider how the above proposals affect Scotland.

Demobilisation.

First, it will be noted that afforestation as an agency for absorbing labour released by demobilisation may be left out of account except in so far as private owners are able to initiate planting schemes without State assistance. The Committee pointed out very clearly that the ability of afforestation

to absorb demobilised labour would depend entirely on the preparation made in advance of demobilisation. That prepara-

Fig. 5.—*Larch at Craigvinean, Dunkeld. Age* 120 *years. Elevation* 1250 *ft.*

tion has not been made. Since the Interim Forest Authority has no power to acquire land or initiate schemes of planting

until its appointment receives statutory sanction, the duty of preparation apparently lay with the Development Commission and the Boards of Agriculture. It was announced more than a year ago that such schemes were in preparation, but none have matured. From the forestry point of view the delay is not altogether to be regretted, since hasty work is usually bad work.

A Central Forest Authority.

Though Scots foresters, almost without a dissentient voice, have declared in favour of a single Authority, with separate Executive departments in the three kingdoms, the proposal met with strong opposition from a section of the Scots members of Parliament. This opposition is not a condemnation of the proposal on its merits, but arises from a fear that it may put a spoke in the wheel of Home Rule. Seeing that a separate Executive department in Scotland is part of the proposal, and that under any scheme of Home Rule certain services, such as the Post Office and the Customs, must be reserved, one is entitled to hope that if a good case is made out for central control in Forestry, Home Rulers will be content that it should be included to this extent among the reserved services. Since the question is of vital importance, it is desirable that the case as it appears to practical foresters should be on record. It may be stated as follows:—

(1) The efficiency of a Forest Service largely depends on its scale. It is only by keeping records over wide areas, and applying the best brains to their study, that conclusions of any value can be reached. For this reason the foresters of small countries like Belgium and Denmark envy the foresters of France and Germany their wider scope. If Scotland had a separate Forest Service, it would rank among the smallest in Europe.

(2) Research must be organised from one centre. The notion that forest conditions differ as between the three kingdoms is erroneous. Conditions as to land tenure, &c., certainly differ, and necessitate separate Executive departments in the three kingdoms. Sylvicultural conditions differ rather as between East and West. The conditions of the larch- and spruce-growing districts of Wales, Westmoreland, and the central and western districts of Scotland are almost identical. So are those of the pine-growing districts in East Anglia and the north-east of Scotland. Research, to be effective, must extend over these eastern and western districts as a whole. The same consideration applies to the study of soils. The limestone in Wester Ross must be studied along with the limestone in Cumberland and Gloucester. In the same way, peat,

which will provide a problem in almost every hill district, must be studied in Devon and Somerset as well as in Inverness-shire.

(3) Education in forestry must be organised for the country as a whole, unless the Treasury is prepared to face much useless expenditure. At present there are seven or more centres for the higher teaching of forestry in Great Britain, not one of which is properly equipped. France, with seven times as much woodland and a far wider range of climate, finds a single well-equipped school sufficient. One centre in each kingdom should be enough. The training of working foresters no less needs to be organised. Scotland had no such school until, within the last few months, the censure of the Forestry Reconstruction Sub-Committee moved the Board of Agriculture to establish one.

(4) A Central Authority is required to allocate schemes of afforestation among the three kingdoms. The margin of profit in forestry is narrow, and it is essential that the best sites should be chosen. Markets have also to be considered. It is probable that an impartial Authority will place the bulk of the forests in Scotland, but Scotland certainly stands to lose by an *a priori* division of the funds allocated to this purpose. If the total area to be afforested is no more than 1,770,000 acres, as proposed by the Forestry Reconstruction Committee, it may very well be argued that the fund should be distributed on the basis of the equivalent grant, as laid down in 59 & 60 Vict., chap. 16, sect. 3. In that case England and Wales would have little difficulty in finding their quota of afforestable ground, though it would compare with Scotland's as 80 to 11.

(5) Scotland contains no Crown Forest except the area purchased in recent years at Inverliever, where none of the plantations are more than ten years old. If Scotland had a separate Forest Service its energies would be confined for many years to nothing but planting. Good foresters could not be trained under such conditions. The Scots service would be at a hopeless disadvantage compared with the English service, which will have 65,000 acres of growing wood under its control.

(6) A Central Authority is necessary in order that the whole question of the nation's timber supplies may be kept in view. Reasons have been given above why this question must be very closely watched. It is on the needs of the nation as a whole that schemes of afforestation must and ought to be based.[1]

[1] This question has been happily settled in Parliament since the above paragraphs were written. They are retained for reference in case the question should again be raised when the promised scheme of Devolution takes shape.

Executive Department in Scotland.

Admitting the necessity for a Central Authority, it may still be argued that the Executive department in each kingdom should remain attached to the Board of Agriculture. Even if the Scots Board had a well-developed forestry section, which is not the case, there would be grave objection to an arrangement under which the Central Authority had to work through a staff responsible to another department. In theory there is much to be said for uniting forestry and agriculture in one department. In practice the alliance has invariably proved fatal to forestry. This is the natural consequence where attention and funds have to be divided between an industry with quick returns and one which offers no return for a generation. In France, where forestry is well administered, the tendency has been to divorce it more and more from agriculture. In that country, as in India, the two departments are now completely separate, except for the link supplied by the minister to whom both are responsible.

Grants in Aid of Planting.

The proposal for directly assisting public bodies and private persons to plant will no doubt come in for a good deal of criticism. The Reconstruction Committee preferred a direct grant to any veiled form of assistance, such as relief from taxation or advances bearing interest below the current rate. If the taxation on woodlands is unfair compared with that levied on other industrial enterprises, as has often been alleged but not yet proved, by all means let it be remedied. The present writer was, before the war, opposed to any kind of subsidy, and said so in a paper contributed to these 'Transactions' in 1911. His mind has changed with the situation. Every calculation on which the success of a planting venture depends is now in doubt. No one can foresee the rates of interest or wages or the price of timber. The only thing certain is that taxation will for many years be abnormally high. Under these conditions private individuals are unlikely to embark on large schemes of planting without some assistance. It is even doubtful whether in the case of heavily burdened estates they will be able to replant the areas felled before and during the war.

The writer is inclined to be more sanguine than some of his friends, and believes that woods planted now will turn out in the end a good investment. Looking back, he sees that the farm has been responsible for far more lost capital than the forest. Looking forward, he sees no reason why the price of timber should sink to the pre-war level. There is indeed good reason for supposing that the price of imported timber, which

governs the market, will not fall below double the price of 1913. He believes that the drop, whatever it be, will be followed by a steady rise. He relies on improved management, more careful choice of species, better methods of nursery work and planting to compensate part at least of the additional cost of labour, and believes that home-grown timber, if graded, sawn, and seasoned to the same specification as imported timber, will command the same price. He believes that as the virgin forests of the world approach exhaustion, this country will reap the advantage of being, as statistics prove it to be, one of the best countries in

Fig. 6.—*Larch on summit of Craigvinean, Dunkeld. Age* 120 *years. Elevation* 1550 *ft. Too much exposed for timber production, but a valuable wind-break for the lower woods.*

the world for growing the kind of timber most in demand. It appears likely at the time of writing that a demand for firewood, which is one of the secrets of successful forestry on the Continent, may be created here by the high price of coal.

But these are speculations which no man of business can be expected to make the basis of large investments. Ninety-seven per cent of the woods and most of the plantable land are in private hands, as well as most of the skilled foresters. The State cannot create forests without a heavy initial expenditure in acquiring sites and training men. The grants proposed represent less than half the actual cost of planting, leaving out of account the value of the land, rates, taxes, and cost of main-

tenance. An amendment inserted in the Forestry Bill by the House of Lords provides that they are to be repaid with compound interest if the profit from the sales admits of this after the owner has received 4 per cent on the money he has himself invested. If by so modest an advance the State can induce public bodies and private owners to shoulder part of the burden, it will be a blessing to an exhausted exchequer, since the required area of wood will be secured with the least expenditure. The grants would have the further advantage of enabling the forest authority to insist on the adoption of regular working plans on the estates receiving them.

Afforestation by Public Bodies.

There is good reason for hoping that public bodies in Scotland may with this encouragement take a considerable part. Certain schemes have already been initiated. The Edinburgh and District Water Trust has planted part of its Talla catchment area. The Corporation of Glasgow has ear-marked 4000 acres on the estate of Ardgoil[1] for planting, and has already planted 500 acres. The work has been carefully planned and executed under the energetic management of Mr James Whitton, Superintendent of Parks. The estate consists of steep rocky ground, which commands a very low rent as a sheep-run, but is admirably adapted for growing timber, with direct access to the sea. It would be difficult to find a site where planting is more likely to prove profitable. The Corporation is now considering a proposal to increase the area to be afforested to 6000 acres. The Middle Ward of Lanarkshire has adopted a scheme for planting 1327 acres in its catchment area at Camps, high up in the Clyde valley. These plantations will have convenient access to the main line of the Caledonian Railway. The nurseries in connection with this scheme have, by a happy arrangement, been placed at Hairmyres, where the District Committee has a sanatorium and colony from which part of the labour will be supplied. Now that building can be resumed, it is to be hoped that these public bodies will make the provision of houses and holdings for their forest workers an integral part of their plans. Dundee is experiencing the advantage of possessing its own reserves of standing timber on estates belonging to the city. These have been felled and converted by the Corporation within the last few months to provide material for an important municipal building scheme. Nor must it be forgotten that town forests have a definite value as places of recreation. Even in Continental countries, where the risk of fire is much greater than

[1] Gifted to the city of Glasgow by Lord Rowallan in 1905.

here, they are regularly used for recreation, and valued almost as much on this account as for their timber.

What Land is to be Afforested?[1]

It is clear that a policy of afforestation must entail the diversion of land from its present use. Where is the land to be found? Arable land must be ruled out as too expensive, even if it were not urgently required for food supplies. We are thus thrown back on rough grazing land, sometimes, though erroneously, described as waste land. The distribution of the new woods between the three kingdoms has still to be determined. But since the rough grazings of Scotland include over 9,000,000 acres under sheep and cattle, and 3,500,000 acres under deer, exceeding in extent those of England, Wales, and Ireland added together, it is not unreasonable to suppose that Scotland may have to find 750,000 acres, or something approaching half the whole area to be planted. The object will be to confine afforestation as far as possible to the least productive grazings.

Deer Forests.

Every one, and most of all their owners, would be glad to see the deer forests devoted to a more productive purpose if that is possible. They have for the most part come into existence under pressure of economic necessity, and often against the inclination of their owners, simply because they command a higher rent for sport than for any other purpose. However unsound, because relatively unproductive, deer forests may be, from the national point of view, the revenue they bring has from the local point of view great value in contributing to rates and enabling owners to meet the expenditure their estates require. In many cases this revenue could not be destroyed without inflicting loss on every one in the district.

The survey will show how much of the area to be afforested can be found in the deer forests. True, they contain much of the highest and wildest ground and large tracts of unplantable bog, but some of them also come down to the sea. The writer has reason to believe that 100,000 acres (or 1 acre in 35) could be planted without appreciably lowering the value of the subjects for their present purpose, or reducing their production of venison, which does not, on an average, exceed 2 lbs. per acre per annum. No doubt the area of plantable land they contain is very much larger, but it could not all be enclosed and planted

[1] The following paragraphs have been partly taken, with permission, from an article contributed by the writer to the 'Scotsman' on 27th July 1917.

without rendering wide extents useless, and this would remain equally true if changes in custom or the law caused the deer to be replaced by sheep or cattle.

Unimproved Grazings under Sheep or Cattle.

Adopting then the figure suggested above, it still leaves 650,000 acres to be provided from the nine million acres of rough grazing now under sheep and cattle. This toll is heavier than it appears. In some cases it may prove possible to plant up whole grazing subjects—reserving for the forest workers any arable land that may be included. In others it may be possible to rearrange adjoining subjects so as to release areas wholly suitable for planting. But, as a rule, even the most suitable subjects will contain a proportion of land too high, too boggy, or too much exposed to grow timber, and such land may become useless even for sport when the lower and better ground is planted. The writer believes that scientific methods can establish good crops of timber on land few foresters will now look at. He is also sanguine enough to hope that bracken-cutting and the application of manures will in certain cases enable the present number of sheep to be wintered on a smaller area, and that the shelter of woods will further contribute to this result. But the value of such expedients remains to be proved. Meanwhile, in reckoning the displacement of sheep, allowance must be made for land rendered useless through loss of wintering, and this may raise the quota to 800,000 acres. This figure represents the total disturbance of sheep farming. It represents less than 10 per cent of the total area of hill grazing under sheep or cattle. It would not normally be complete for eighty years, assuming that to be the average rotation of the woods. Since, however, it is essential to reach the safety-point in timber as soon as possible, and since the arrangements for planting must be made some years in advance, the greater part of the disturbance may be expected to take place during the first fifty years. Given so long a period, so wide a choice of ground, and a plan thought out well in advance, it ought to be possible to obtain the area required without any disturbance of current leases. It is indeed probable that subjects which are in any case changing hands may in the earlier years provide all the land required.

We are considering the reconciliation of existing interests to a definite national need. It would be easy to show that afforestation might, with national advantage, be carried far beyond the point necessary for national safety, since the few pounds of mutton and wool produced annually by an acre of hill-grazing represents much less wealth than the load of timber produced

by an acre of forest, while the forest, as the Reconstruction Committee points out, supports ten families for every one supported by the sheep farm. But it would be a grave mistake to treat these industries as rivals. Each is required, and each has its proper place. The best ground for trees is not necessarily the best ground for sheep. Argyllshire, for example, contains steep rock-strewn hills, which grow excellent timber, though not worth 6d. an acre for grazing. Again, while sunny slopes are best for sheep, woods prefer a northern aspect. And each industry can help the other. No sheep farmer, unless he be very short-sighted, will despise the shelter afforded by woods, the material they make available for fencing and buildings, or the improved markets and communications incidental to a timber-producing district.

It is not easy to fit changes like these into an old country. It can only be done if the machinery employed is elastic, and capable of following the line of least resistance in each individual case.

Acquisition of Land.

In areas scheduled for planting, if landowners are unable or unwilling to afforest for themselves with the assistance offered, or to agree on terms for afforestation by the State, the Forest Authority must have power to acquire land for this purpose by compulsion. Fair compensation must in such cases be awarded, not after the fanciful manner which has grown up under the Land Clauses Acts, but on the basis of the actual value to the owner and to his tenant if the latter is disturbed. Much injustice and litigation will be avoided if provision is made that only whole subjects be taken by compulsion. It is also essential to the smooth working of such a measure that the court which sanctions its application and awards compensation should be free from political bias and such as to command general confidence.

The writer would not have the reader underrate the difficulties which confront the movement he has attempted to describe. Afforestation is never popular. The present inconvenience, however slight, provokes opposition and clamour. The future benefits, however great, are accepted in silence. This is the experience of Europe, from the Pyrenees to the Caucasus, of the United States, and of Japan. It is therefore to be hoped that the Government and Parliament will show resolution in carrying through the policy they have adopted, brushing aside the short-sighted opposition which is certain to arise, and focussing attention on the great benefits which this policy holds for the future.

THE OX WARBLE OR OX BOT FLIES

(*Hypoderma bovis* and *Hypoderma lineatum*).

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These two flies, both of which are found in England, Scotland, and Ireland, belong to the Family Œstridæ, a family of thick-set, moderately large flies, generally more or less hairy, with short, inconspicuous, three-jointed antennæ which bear an arista. The adult flies are quite unable to pierce or wound animals, for their mouth parts are rudimentary or absent, so that the fly does not and cannot wound the skin and then feed. The business of the adult flies is providing for the upkeep of their kind—*i.e.*, for the continuance of their race. The family has a great interest for us, inasmuch as the females lay their eggs on mammals—*e.g.*, cattle, sheep, deer of different kinds, camel, antelope, horse, elephant, rodents—and the larvæ from these eggs are parasitic on the mammal, nourishing themselves, from the time of hatching till they are full-fed, on the animal on which the eggs were laid.

The Family Œstridæ can be divided into three very natural sub-families in which not only can a distinction be drawn between the adult flies and their larvæ, but the place in the animal in which the larvæ are found is also distinct. The larvæ of one of the sub-families, the Cuticolæ (= living in the skin), are found under the skin; to this sub-family the Ox Warble Flies belong. The larvæ of the other two sub-families are found, in the one case, in some part of the alimentary canal—*e.g.*, the Bot Flies of the horse, and in the other, in some cavity—*e.g.*, the nostrils and frontal sinuses, as in our Sheep Nostril Fly.

The Ox Warble Flies (*Hypoderma*) seem to have been known to Pliny in old Roman times, and again are mentioned in Italian literature about two hundred and twenty years ago. Bracy Clark[5&6] in England, in the end of the eighteenth century and the beginning of the nineteenth century, published observations on Bot Flies. In more recent times Brauer,[1] in a fine Monograph in 1863, summarised the then knowledge of the Family Œstridæ. Brauer figured the eggs of *H. bovis* in 1863, and Riley those of *lineatum* in 1892, the eggs being dissected out from a ripe female. Brauer[2] followed up his Monograph with further published references to the Ox Warble

Flies in particular. In the United States, till 1900, the chief workers on Ox Warble Flies were Curtice[7] and Riley,[9] while there is a considerable literature in France, Germany, Austria, Holland, Denmark, Scandinavia. A list of the literature referred to in this review and summary of our knowledge of the Ox Warble Flies is printed at the end.

Details in the life-history of the Ox Warble Flies have been, and still are, in dispute, for although the last stages have been known, there has been considerable difference of opinion as to where the eggs are laid and where the early stages of the larvæ are passed before the larvæ reach the under side of the skin of the back, and how the larvæ get there. In Britain, the late Miss Ormerod,[21] by special pamphlet and in her Annual Reports, made the ravages of these insects on cattle widely known, gave a mass of information, supplied by willing helpers, on practical details, and showed how prevalent was the work of *Hypoderma* all over the country. Dr A. D. Imms,[22] in 1906, gave a most useful summary of the beliefs regarding the life-history of *Hypoderma* till that time. Gaps still remained in the life-history, and there was doubt as to whether *Hypoderma bovis* and *Hypoderma lineatum* were both present in England, Scotland, and Ireland. More intensive study of these flies has proved the presence with us of both species, and has resulted in much additional knowledge as to life-history and habits. Specially do we owe much, in the British Isles, to the work and experiments, in the last fifteen years, of Professor G. H. Carpenter of the Department of Agriculture and Technical Instruction for Ireland, and his colleagues, in a series of papers by Carpenter himself, Carpenter and Steen,[23] Carpenter and Prendergast,[25] Carpenter and Hewitt,[27 & 28] Carpenter, Hewitt, Reddin, Duncan, and Jardine,[29] Carpenter and Corson.[26] H. M. Steven, B.Sc., working in my laboratory, collected, in late spring and summer, 1914, from hides in the abattoir near Edinburgh, a large series of larvæ of *Hypoderma*, and afforded proof that we had in Scotland both *H. bovis* and *H. lineatum*.

Quite independently, at the same time and on the same subject, Gläser[30] in Germany and Dr Seymour Hadwen[31] in Canada have been researching, and their papers are valuable. Very little of the new work on Ox Warble Flies has got into the text-books yet, and as in addition a Government Committee has taken the matter up, this is a favourable time to review the whole subject for the benefit of our members.

The subject of "Warbles" has never failed to receive at least some attention from agriculturists. References to the subject are scattered through the reports of Professor Theobald and Mr Warburton in England, and in our own 'Highland and Agricultural Society's Transactions.' In 1887, at a general meeting

of the Highland and Agricultural Society, the late Secretary "called attention to a Circular which had been sent by the Society to nearly two hundred local agricultural associations in Scotland, on the loss sustained by the farmers by the damage done to hides and even to beef by Warbles, and asking them to get their members to adopt means to prevent the Warble Fly from depositing its eggs in the hides of animals." Along with this circular there were sent copies of two reports and a leaflet on the Warble Fly by Miss E. A. Ormerod. Although little seems to have resulted from this circular, there is no doubt that the intention was wise—namely, to get combined effort—otherwise the careful man who strives to get rid of Warbles finds himself penalised by the carelessness or indifference of others who adopt no treatment. In spite of the admitted great annual loss due to Warbles on cattle, there has been no combined general effort to fight the pest, and, it must be said, the attitude of many in the past has been represented by the opinion of the old shepherd whose statement lies before me—"That's jist naethin'; it's a guid yin, or the Warbles wid leave it alane." Now, when the prevention of waste has become clamant, there should be unanimous effort to prevent the loss due to Warble Flies.

The Adult Flies.

Hypoderma bovis (Fig. 7) measures just over half an inch in length (14 millimetres in exact measurement), and at first sight suggests a bee (young people on being shown the fly have their eye caught by the hairiness and the colour, and at once call the fly a bee). The mouth parts are rudimentary, the flies cannot feed. The face and head are yellowish; the front part of the thorax is covered with yellow hairs; the part behind this is black; the hind edge of the thorax is also black, but just in front of this edge there is a band of yellow hairs. The two flying wings have a brownish appearance, the veins being dark-brown; the fourth longitudinal vein bends up towards the third longitudinal (in the Horse Bot Fly the fourth longitudinal vein runs out to the edge of the wing without bending upwards towards the third longitudinal). The hairy abdomen is yellow or yellow-white in front, black in the middle, and orange-yellow at the tip. The legs are dark in colour, with the tarsi (feet) paler. The female has an ovipositor made up of several of the hind segments of the abdomen telescoped into one another; this ovipositor is not fitted for piercing.

Hypoderma lineatum is slightly smaller than *H. bovis;* it measures only half an inch in length. The most characteristic feature of *lineata* as compared with *bovis* is met with in the

thorax, where instead of the yellow hairs in front being followed by a black region, nearly the whole of the thorax of *lineata* has black and white hairs, but dark longitudinal lines running down the thorax remain quite conspicuous. The veins of the wings are darker in *lineatum* than in *bovis*. Hadwen[32] gives as a

Fig. 7.—Hypoderma bovis.
From nature. Three flies are shown enlarged.

characteristic difference, based on a comparison of both species, that "*H. bovis* has clean legs with comparatively few hairs," whereas "the legs of *lineatum* are rougher and more hairy, especially the tarsi."[1]

The Eggs.

Brauer[1] gives a figure of the eggs of *H. bovis*. The egg measures $1\frac{1}{4}$ mm. long ($\frac{1}{20}$ inch), and is provided with a stalk or foot which is grooved; the groove fits over the hair, helping to clasp the egg to the hair of the animal. The egg is white, and in shape oval and elongated.

Riley,[9] in 1892, figured the egg of *H. lineatum*. The eggs

[1] The structural differences exhibited in the external parts of the reproductive organs afford differentiating characters between *H. bovis* and *H. lineatum*, but dissection and microscopic examination are necessary. These minute differences are outwith the purpose of this review. They are fully detailed by Carpenter and Hewitt in 'The Scientific Proceedings of the Royal Dublin Society,' vol. xiv., April 1914.

resemble those of *bovis*, but the grooved stalk of the egg is a little longer and narrower. On an animal the eggs of *H. bovis* are found one on a hair, whereas with *lineatum* the eggs are several together in a row on the same hair (Fig. 8, which I owe to the courtesy of Professor Carpenter).

Fig. 8.—*Eggs of* Hypoderma lineatum *attached to hair of cow.*

Five of the eggs have hatched and six are unhatched. Magnified 15 times. Professor Carpenter's figure.

The Larvæ.

The ripe full-fed larvæ of both *bovis* and *lineatum* are familiar in appearance (Figs. 9 and 10), but each larva differs at different periods of its growth. Each larva has four stages. Stage 1 is the condition of the larva on hatching and moving to and taking up position in the infected beast's gullet. Stage 2 is found in the gullet and wandering from the gullet to the back. Stage 3 is reached in the back itself, and it is in this stage that the opening is made through the skin of the back to the outside. Stage 4 is the larva, so well known in the warbles, which after a time presses itself out from the back and falls away. Till recently the larva was written about as passing only through three stages, the very earliest stage being mixed up with our 2nd stage, and thus there is some confusion in the literature—*e.g.*, the 2nd stage of Brauer is our 3rd stage, and the 1st stage larva of Miss Ormerod is really the 2nd stage larva.

1st Stage Larva: Gläser[30] in Germany and Carpenter[27] at Ballyhaise, Ireland, in 1913, are the first workers to have actually got the 1st stage larva of *Hypoderma* in the free hatched state, although Curtice and Riley in the United States

in 1892 had given a description of the unhatched larva of *H. lineatum*. Carpenter and Hewitt[27] have described

Fig. 9.—*Larvæ of* Hypoderma bovis.
Natural size. From nature.

fully, with figures, the newly-hatched 1st stage larva of *H. bovis*. Examined from the side this larva has the head-end narrower than the tail-end; under the microscope a pair of spiracles can be seen at the very front end above the mouth (the usual place for these anterior spiracles is on a segment behind the head); mouth-hooks are present with sharp bifid tips, and between them projects a well-marked middle spine. The segments of the body are strongly spined, several rows of spines to each segment. The spiny armature is stronger on the under surface than on the upper surface. On the upper sur-

Fig. 10.—*Larvæ of* Hypoderma lineatum.
Natural size. From nature.

face of the second-last and the third-last segments spines almost fail. The last segment of the body is marked by the particular spininess of the under surface, and the hind spiracles lie amidst spines; the spiracles have round openings. The anus is also situated on this last segment. The general appearance of this larva suggests power to burrow.

The 1st Stage Larva of *H. lineatum* has, according to Gläser, a stronger mouth armature and stronger spines; Riley in his description mentions the anterior spiracles.

The 2nd Stage Larva of *H. bovis* is worm-like and cylindrical; its particular feature is the absence of the formidable spininess mentioned as present in the first stage, except that the spines remain quite distinct on the last segment. In spite of the seeming absence of spines on the body segments generally, magnification and careful examination will reveal the spines, but these are very minute.

The 2nd Stage Larva of *lineatum* was described by Curtice and Riley as smooth and without spines (spines are probably present but very small), except for some at the mouth-end and on the last segment.

The 3rd Stage Larva of *H. bovis* exhibits a change in appearance to a more pear or club-shaped form; very small mouth-hooks are present; the rows of body-spines are evident, and the spiracles are rounded with horny tips. It is in this stage that the larva makes the passage from below the skin of the back to the outside air.

The 4th Stage Larva of *Hypoderma* is the stage we are most familiar with, and the one generally described in the books (Figs. 9 and 10). In this stage the larva is somewhat barrel-shaped or bluntly oval, with thick rough skin, and very muscular; the transverse rows of spines are evident; the spiracles show a kidney-shaped pattern. Following Brauer, the 4th stage larva of *H. bovis* and of *H. lineatum* may be contrasted. Brauer's characters proved quite trustworthy in Carpenter's work, and in our own work at Edinburgh it has been found that after a very little practice the student can distinguish without much difficulty larvæ of *bovis* and *lineatum* in their final or 4th stage form.

Larva of *H. bovis*. Fourth Stage.	Larva of *H. lineatum*. Fourth Stage.
Longer 25 mm. to 28 mm. (1 to $1\frac{1}{8}$ inch), being wide towards the hind region and tapering towards the head.	Usually less than an inch long. Narrower.
Larva not so spiny.	Larva has stronger spiny armature.

Larva of *H. bovis*. Fourth Stage—*continued.*	Larva of *H. lineatum*. Fourth Stage—*continued.*
The segment in front of the one that bears the spiracles (*i.e.*, the second last segment) has no spines either on upper or lower surface.	The segment in front of the one that bears the spiracles has spines both on upper and lower surfaces.
The segment second in front of the one that bears the spiracles (*i.e.*, the third last segment) has spines on the under surface but none on the upper.	The segment second in front of the one that bears the spiracles has spines both on upper and lower surface.

This variation in armature (using a lens for certainty) proves a most satisfactory distinguishing character. Additional characters found by Steven useful as aids in distinguishing the final stage larvæ of the two species, but not to be relied on alone with absolute certainly, are—

H. bovis.	*H. lineatum.*
Barrel-shaped and thicker in proportion to length.	Thinner.
The hind segment has the spiracles more compressed.	The hind segment has the spiracles tending to jut out, so that the larva has a more pointed appearance.

The Puparium.

The full-fed larva presses itself out of the cell or warble in the back and drops to the ground. In a place of shelter the external skin is moulted but not thrown away: it is retained as an exter-

Fig. 11.—*Puparium of* H. bovis *from which the adult fly has issued.*
Enlarged from nature.

nal protecting case or puparium under cover of which the winged fly develops. Brown at first, this pupa-case or puparium gradually changes to black (Fig. 11).

Life-History.

Opinions as to the details of the life-history of the *Hypoderma* flies are varied, and this is partly due to several difficulties. In the first place the eggs are not easy to find. It is very difficult to get the chance to see the females laying their eggs or to find the eggs when laid, unless in special circumstances where calves or young cattle can be given over specially for the purpose and special watch kept and scientific observations made. Another difficulty is that even when the eggs are found the observation of hatching and the fate of the newly-hatched larvæ are difficult to follow in natural environment; the newly-hatched larvæ are not only very small but almost transparent. Still another difficulty exists in that, soon after hatching, the larvæ are hidden from sight for a number of months before reappearing in the skin of the back. Even in an experimental animal, killed for the purpose of examination, the most careful dissection is required to follow up and find the larvæ in their wanderings, for their tracks may be completely covered up.

Beliefs that are Wrong or almost certainly Wrong.

It is still widely believed by many who have had no chance to know the new work, and also by some who have, that the eggs are laid below the skin. It is quite certain that this is wrong, for the female fly cannot pierce the skin. Further, as has been described, the egg contains an appendage which helps to anchor the eggs to the hair.

Then, till Carpenter's work, it was the commonest opinion that the usual place for the laying of the eggs of *H. bovis* was on the hairs of the back. It is impossible to insist dogmatically on this any longer in view of observation and experiment. With this belief gone, treatment based on it is a waste of time and labour.

It was the view of some workers that the eggs laid on the hairs were sucked into the mouth, or that the cattle licked off the eggs from the hairs and that these eggs were swallowed and then hatched in the alimentary canal, the larvæ then wandering to the back. This is disproved by the recovery, after hatching, of the empty egg-shells still sticking to the hairs.

The view championed by Miss Ormerod was that the larvæ, hatching from eggs laid on the hairs of the back, bored directly through the hide and wandered for a time in the tissue of the back below the skin, to reappear later in the characteristic warbles. It is not impossible that this might happen—it is not the common happening, however, but exceptional.

The more likely Views.

It had been shown in the United States that *H. lineatum* laid her eggs on the hairs of the legs, and this has been shown, in Ireland, to be true also of *H. bovis*. With this admitted, two problems fall to be considered:—

(1) That, as was the old teaching about *H. lineatum*, the larvæ, hatching from eggs laid on the hairs of the legs, are conveyed to the mouth by the tongue of the beast, enter the wall of the gullet, and later on reach the back after a process of wandering, and then make a passage to the outside; or

(2) That the larvæ are not conveyed to the mouth, but, hatching on the hairs of the legs, bore directly into the skin there, and after a long wandering, the gullet being one of the places visited, reach the skin of the back and make a passage to the outside.

A great deal of the experimental work has been directed to these two views, and skilled observation, experiment, and dissection have brought to light a number of very interesting points regarding place of egg-laying, mode of entry of larva to the host, and internal parts of the host's body visited by the larva before its appearance in warble or tumour in the back.

Experimental Work.

The Finding of the Larvæ on Dissection of Cattle and the Wandering of the Larvæ.

Larvæ have been dissected out from the gullet, the spinal canal, the spaces between the vertebræ, and from below the skin before any opening was present to the outside.

Very small larvæ were got in the spinal canal by Hinrechsen [11] in 1888, and by Horne [12] in 1894 and 1895. Ruser [14] found larvæ in the wall of the gullet in 1896.

Koorevaar,[16] in February 1898, found larvæ in the gullet, in the spinal canal, in the spaces between the vertebræ, and beneath the skin. In one case larvæ were got in all these places in the same beast, a yearling, and it is interesting that the larvæ were in the same stage, as taken from these various places. Koorevaar's view was that the newly-hatched larvæ of *H. bovis* entered the skin at once and moved to the spinal canal and other places, reappearing later under the skin of the back. Koch in 1903 found larvæ in the gullet, spinal canal, and below the skin of the back. Jost [24] found larvæ in the gullet and first part of the stomach. In 1909 Carpenter,[25] during October, November, and December, found larve of *H. bovis* just below

the lining membrane of the gullets of two- to three-year-old heifers and bullocks slaughtered for the Dublin market; these larvæ were numerous and in the second stage. Again in August, September, and October of 1910 larvæ were found in gullets. In 1910, Peters, at Hamburg, found larvæ in the gullet, these appearing first in August and reaching their maximum numbers in January and February. Examination of gullets and stomachs carried out over a year—October 1913 to September 1914—in the Veterinary Hygiene Division of the Department of Agriculture for Ireland[29] (F. C. Mason, M.R.C.V.S., head of the Division) gave the following results:—

Year and month.	Number of gullets examined.	Number of gullets containing larvæ.	Number of larvæ.
1913. October	35	3	26
" November	80	20	123
" December	92	14	157
1914. January	96	16	254
" February	138	8	55
" March	164	2	5
" April	171	0	0
" May	232	0	0
" June	152	0	0
" July	82	0	0
" August	92	1	1
" September	161	2	4

This is an instructive table from several standpoints, the complete year's examination showing the times when the larvæ are likely to be in the gullet and when migration is taking place towards the back, beneath the skin of which the larvæ may be found, on the average, in the late part of one year and the early part of the next.

Carpenter, Hewitt, and Reddin,[29] in a fifteen-months-old bullock, found two second-stage larvæ of *H. bovis* "in the loose connective tissue outside the muscular coat at the lower end of the gullet; the head-ends of these maggots were directed towards the bullock's back. A week later another maggot was found in a four-year-old bullock in the same position as the former two. In a two-year-old bullock examined on 16th February, and a four-year-old on the 26th February, larvæ were found (one in each) also just outside the muscular coat of the gullet, in the thoracic region close to the diaphragm." In one bullock a second-stage larva was found "between the peritoneum and the abdominal face of the lumbar muscles"; and in another bullock a second-stage larva was found "in an interspace

between two of the lumbar muscles." Carpenter and his colleagues found also second-stage larvæ below the skin of the back, but, unlike the observers quoted above, failed to find larvæ in the spinal canal.

Curtice, in the United States in 1890, found many *H. lineatum* larvæ in the walls of the gullet, under the pleura, in the region of the eleventh rib, in the spinal canal, and underneath the skin of the back.

Hadwen,[32] in Canada, has found many larvæ of *H. lineatum* in the gullet underneath its lining membrane, at the junction of the gullet and first chamber of the stomach (paunch), in the spinal canal, and underneath the skin of the back. Hadwen suggests for *H. lineatum* larvæ an entrance through the skin (chiefly of the leg), a reaching of the gullet, a gradual working towards the diaphragmatic end of the gullet; then across the diaphragm, to follow the ribs in the neighbourhood, next passing between the intercostal muscles, reaching the upper part of the intercostal space, entering the spinal canal through the posterior foramen, and finally reaching the skin of the back. Or perhaps the larvæ on leaving the gullet pass through the pillars of the diaphragm on their way to the spinal cord, thence later "through the intermuscular connective tissue of the muscles of the back to the skin of the back."

Different routes are possible, however, for *Hypoderma* larvæ, and there may be no absolutely constant road. That the larvæ are capable of distinct wandering is well known. For example, Koorevaar[17] took eleven larvæ obtained in the spinal canal of a calf, and experimentally introduced them below the skin "in the left lumbar region of a small dog." The wound quickly healed. Eighteen days later, with the same dog, Koorevaar placed other fifteen larvæ below the skin of the right side. In a fortnight the dog was killed, and on dissection the whole twenty-six larvæ were recovered. The wandering in the short time had been very considerable. Quoting from Imms[22]: "Five of the larvæ were found still beneath the skin, and, of these, one was found in the left costal wall, one in front of the shoulder, one in the right thigh, one on the skull, and a fifth on the jaw. Six of the larvæ were found lying free in the peritoneal cavity between the folds of the intestine, and a further five were discovered in the fat of the spleen, kidneys, omentum, inguinal canal, and the retroperitoneal tissue respectively. On removing the kidneys three were found on the psoas muscles, and three more were met with in the wall of the œsophagus, two others in the peritracheal tissue, and two in the spinal canal between the dura mater and the periosteum."

There is another interesting case, quoted by Carpenter from Gläser,[30] showing how the larvæ wander. While Gläser was

experimenting with *H. lineatum* in the month of June, a female by chance laid an egg on his trousers. The larva on hatching entered Gläser's leg, a red spot marking the place of entry. After some days the larva could be felt through his skin. The larva continued to work upwards until early in September swellings could be seen on hip and abdomen. At the end of September a swelling in the lower part of the gullet was indicated by pain when swallowing. "This moved quickly up the gullet, and on 2nd October Gläser had the satisfaction of extracting a Warble maggot 7·5 mm. long (a common size of larva to be found in an ox's gullet) from his own mouth."

This presence of *Hypoderma* in man is not at all an isolated case, for several records attest how man has acted as the host of *H. bovis* and *H. lineatum* larvæ. In Scandinavia, it is well known that workers among cattle may harbour under the skin larvæ of *Hypoderma*, which larvæ, after a period of wandering in the upward direction, reveal themselves in a later stage in skin tumours on neck, or head, or shoulders.

How do the Hypoderma larvæ reach the gullet? Are the newly-hatched larvæ licked into the mouth and so reach the gullet directly, or do the newly-hatched larvæ bore at once into the skin and by a process of wandering pass to the gullet?

1. *The evidence in the case of* H. bovis.

Experiments by Carpenter, repeated in different years, with calves kept muzzled so that they could not lick themselves, have afforded a strong body of evidence against the "entry by the mouth" theory. Occasionally the result of the experiment was a little puzzling, seeming to favour the theory that entry was by the mouth, but as the method of muzzling and protection became, with the gained experience of previous tests, more perfect, the evidence against the entry by the mouth became overwhelming. To show the method of experiment one example may be described. A leather muzzle surrounded by a wire cage (the leather was thus prevented from touching the animal) was fitted on the calf, and the calves were kept muzzled from the beginning of May to the end of September. The calves were in the same pastures as a number of unmuzzled control calves. When the muzzled calves were brought in to be fed, the protective arrangements were such that these calves could not lick themselves. Nine "muzzled" calves were so kept during 1913, and the number of warbles counted on them in 1914, from March to June. The number of warbles altogether was 194—*i.e.*, an average of 21·55 per head. At the same time eleven "unmuzzled control" calves that had been with the others during 1913 had their warbles counted in 1914,

from March to June. The total number of warbles was 166—*i.e.*, an average of 15 per head.

Of course it is not impossible in ordinary conditions that larvæ may reach the mouth and thence the gullet, but this is not the usual thing. Further, there is experimental evidence in favour of the direct entry of the newly-hatched larva to the skin. Gläser in 1913, at Berlin, placed new-hatched larvæ of *H. bovis* on a shaved patch on a calf, but nothing happened. Hewitt and Whelan, collaborating with Carpenter, placed seven larvæ of *H. bovis*—newly hatched in an incubator—on the shoulder of a calf where the skin had not been shaven, but the hair clipped close. The seven young larvæ were watched through a lens; they crawled down the clipped hair, cut right into the skin, and in time disappeared. The boring until the time of their disappearance took about six hours. "Next morning there were three little eruptions or pimples just where they had entered, and we found four other little pimples indicating where the other larvæ had also bored in. On the calf from which the eggs had been taken we let about a dozen eggs remain on the hairs; these were taken off on the succeeding morning and found to be empty shells. The skin near these, when examined, exhibited a number of small pimples easily seen with the naked eye; they became a little larger during the day, and apparently burst during the following night, because next morning they were dried up and a small scab had been formed. We examined them, but found no trace of the larvæ. In about a week all trace of the pimples was gone, not even a scar being left. The calf experimented on was one of the muzzled lot, and was kept for three days tied between stakes to facilitate observation, so that it could not injure the eruptions by rubbing them. The calf appeared to feel the larva piercing the skin at first, because its restlessness made examination difficult, but the symptoms of discomfort soon passed away."

In view of the foregoing evidence we cannot resist the view that the larva of H. bovis *does not normally enter by way of the mouth.*

2. *The evidence in the case of* H. lineatum.

Curtice, of the United States Bureau of Animal Industry, made a series of observations on *H. lineatum* in 1890 and 1891, and following his work, most of the teaching has been that the larvæ of *lineatum* reached the gullet by being taken into the mouth when the animal licked itself. Riley, the United States Entomologist of the time, doubtful at first as to this method of reaching the gullet, supported Curtice's theory after observations of his own.

Hadwen, observing and experimenting in Canada, has come to the conclusion that the larvæ of *H. lineatum* are not licked into the mouth, but reach the gullet by boring into the skin and then wandering to the gullet. "Upon emerging from the egg the larva (of *lineatum*) crawls actively along the hair (to which the egg is attached) to the skin. Upon reaching the root of the hair it begins to work with its mouth parts." Hadwen had satisfied himself, by placing newly-hatched larvæ on pieces of skin, that they could penetrate the skin, and in special conditions (by removing, for example, a piece of skin on the hairs of which *lineatum* eggs were present, and finding that the larvæ hatched and entered the skin) had been able to observe the natural penetration.

Hadwen's experiments in 1915 with *lineatum* not only confirmed Carpenter and Hewitt and Whelan's observations of 1914 of the penetration of the skin by *H. bovis*, but they supplemented earlier observations on *H. lineatum*. Previously, in June 1913, Carpenter[29] and Lang had found at Athenry Agricultural Station, County Galway, that a number of eggs of *H. lineatum* had been laid on the hairs of cows' thighs, not far below the root of the tail. The scant hair at this place favoured observation, as also did the fact that the cows stood quietly in the byre. "A few days after the eggs had been laid, a soreness was observed in the neighbouring region of the skin with a discharge of matter. On looking with a lens at the skin near the newly-laid eggs we saw that it was perforated with minute holes, from which flowed a watery discharge, hardening on the surface to form a scaly deposit. After a day or two the region became covered with small pimples, which disappeared a few days later. On squeezing the skin of the earliest 'case' that could be obtained, some clear watery fluid exuded from the holes, and on examining a smear of this under the microscope, we were delighted to find a newly-hatched maggot of *H. lineatum*."

The bulk of the evidence then is in favour of the direct entry to the skin by the newly-hatched larvæ of H. lineatum.

On what Part of the Animal are the Hypoderma Eggs laid?

It is only in the last year or two that we have certain knowledge as to where *H. bovis* lays her eggs. Although the eggs of *H. bovis* were figured many years ago, the figure was made from eggs dissected from the body of a fly. A very general opinion was that the eggs of *H. bovis* were laid on the hairs of the back, but experiment and observation both prove that in nature it is rare to have the eggs placed there. As regards experiment, two calves had their backs protected with covers from June 18

till the end of September 1913, while two other calves had their legs encased in linen leggings. Examined for warbles in the spring of 1914, the calves that had worn leggings had no warbles on them, while the calves without leggings but with backs protected had each two warbles.

From direct observation both Gläser and Carpenter find that *H. bovis* lays her eggs "almost exclusively on the legs, not confining herself to any particular part, but showing a distinct preference for the heel or hock-joint of the hind limbs." Sometimes eggs are laid on the sides, flanks, belly, and hips, but not on the back.

As regards *H. lineatum*, the situation of her eggs has been actually known since 1892. Curtice and Riley stated the preference of the fly in her egg-laying for the flanks and legs around the heel. This is confirmed from actual observation by Gläser. Earlier in this review I have quoted the case of the Athenry cows where *lineatum* eggs had been laid on the hairs of cows' thighs. Hadwen [32] found *H. lineatum* laying on the hairs by the side of the sternum, also on the hairs between the point of the hock and the ischium, on the side and also on the tail, and on one occasion found seven eggs on the scrotum of a bull calf. Hadwen has taken adult *lineatum* on recumbent animals.

Hadwen [31] observed that where *H. bovis* flies were numerous and calves were confined in a small paddock in which there was no shelter, the calves with their endeavour to escape the flies became so tired and terrified that they lay down; in these circumstances the eggs were laid on the flanks and round the buttocks.

Typical Life-History of *Hypoderma bovis*.

The flies are active—the males specially—in the summer sunshine, and a slight humming noise attends their flight. They pair, not necessarily on the wing, and the female lays her eggs chiefly on the legs, commonly the hind legs. The eggs are laid one on a hair and near the base of the hair. This laying of a single egg at a time means a constant change of the fly's position or a leave and return, and this helps to irritate the animal to which the fly is paying attention. The approach of the fly and the come-and-go in its egg-laying alarm and annoy the animals, and this is indicated by excited movement and by "gadding."

A single female can lay a large number of eggs. The female has two ovaries; each ovary consists of more than one hundred ovarian tubules, and each ovarian tubule holds three or four eggs. To lay the eggs the fly pushes her ovipositor down among the hairs. The eggs fit to the hair by the groove on the stalk that projects from the hind part of the egg.

How long the eggs take to hatch depends on the conditions, specially on the temperature. Between three and four days is a typical time. Gläser placed newly-laid eggs of *H. bovis* on soil, and the eggs took twelve days to hatch; eggs laid on his trousers by the same female fly and allowed to remain there, hatched in eight days; eggs left untouched on a calf's hairs hatched in three and a half days; eggs placed by Carpenter in an incubator at a temperature of 40° C. hatched in four and a half days.

The larva pierces the shell by striking the front part of the egg with the median spine (see back for the description of the newly-hatched larva), widens this slit by means of its tearing mouth-hooks, and then, by the aid of the backwardly-directed spines of the body, leaves the egg. The larva then crawls down to the base of the hair and cuts its way into and under the skin, not to be visible again from the outside for a number of months. After a process of wandering, in the course of which various regions of the animal are visited, the larva reaches the tissues on the under side of the skin of the back. Swellings or tumours appear on the back, and through each an opening is made to the outside by the larva. In this swelling or warble the larva remains till it is full-grown.

During the larval life four stages are passed through, these stages being marked by a recognisable difference in external appearance of the larva, a difference in which the nature of the spiny armature—sometimes formidable, sometimes inconspicuous—is the most evident.

The first-stage larva enters the skin directly, and reaches the gullet in some way (does the blood-stream help ?); the second-stage larva is in the gullet, and remains there for a considerable time before wandering to and reaching the skin of the back. The third-stage larva, from the tissues below the skin of the back, makes a passage to the outside; the fourth-stage larva ripens in the warble and then leaves it. The fourth-stage larva lies in the warble with its hind spiracular end nearest the opening in the skin. The cavity of the warble shows blood and pus from the ulceration induced by the irritating presence of the larva. On the products of the ulceration the larva nourishes itself and completes its growth. Some of the pus may exude from the external opening and mat together the surrounding hairs (Figs. 12 and 13).

The full-fed larva presses itself out of the warble, generally early in the morning. Having fallen to the ground, the larva moves to some place of shelter (although legless, the larva can move in a definite direction), where it moults off its outermost spiny layer of skin. This moulted outer coat is not thrown aside, but remains as a hard protective case—the puparium—

under cover of which the changes take place that result in the development of the adult fly. The puparium, dark-brown at first, becomes quite black. The pupal or resting stage lasts from six to eight weeks, and the fly, when ready, pushes off a lid at the narrower end of the puparium and comes out. The puparium, with its rounded exit-hole, is seen in Fig. 11. Escape from the puparium takes place in sunny conditions.

Fig. 12.—*Under side of hide of ox, showing warbles, each of which contains a larva of* Hypoderma lineatum.

In the lower figure a larva has been exposed. From nature. Reduced.

The whole life-cycle, from egg to adult, takes a year; the times for the different stages may be stated generally thus: egg four days, larval stage eight or nine months or over, pupal stage six weeks to two months.

The individual flies are not long-lived, but their flight-period is not confined to a special week or fortnight of the summer. Some are earlier, some later, in the season. Probably in Scot-

land the first *H. bovis* flies of the year are about in June, and the latest in early September. This extended flight-period means that egg-laying may take place throughout the warmer part of the year, and larvæ of different ages will be found at the same time.

While February and March and April are common months in Scotland for the tumours showing on the backs of cattle,

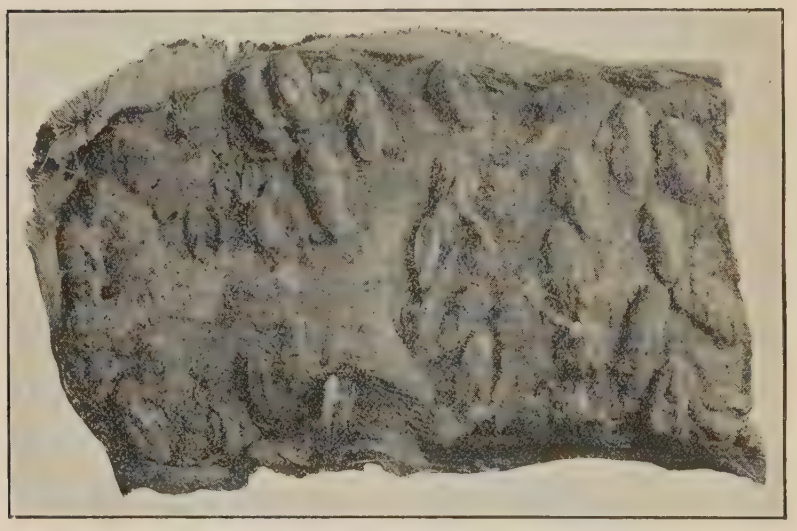

Fig. 13.—*Under side of hide of deer, showing warbles, each of which contains the larva of* Hypoderma diana.

From nature Reduced.

these can be felt and seen sometimes earlier. The swellings with larvæ in them are also to be found later; indeed I have been surprised several times at the lateness in the season at which I have still been able to find tumours with live larvæ in them.

Yearlings and calves and young cattle are more commonly used as hosts by the fly than older cattle.

Life-History of *H. lineatum*.

The general round of life for *H. lineatum* resembles that just stated for *H. bovis*, although there are some small differences in time of appearance and habits of the fly.

H. lineatum has been proved to appear rather earlier in the season than *H. bovis*—viz., the month of May. In Scotland we have both species of Ox Warble Fly. A count of specimens in

the first year of the war in the abattoirs near Edinburgh gave 78 per cent *bovis* and 22 per cent *lineatum*, but these figures are not to be considered as indicating definitely the proportionate numbers of the two flies in Scotland, but only a count made in one part of Scotland in one year. The war has prevented the following out of what had been intended to be a more extended inquiry over Scotland as to numbers and distribution.

Curtice and Riley, in 1892, described the laying of the eggs, and their observation has been confirmed by British and Continental workers and by Hadwen in Canada. The eggs are fixed to the hairs, but a row (and not a single egg, as in *bovis*) of eggs is laid on the same hair (Fig. 8). The number of eggs in the row varies: Hadwen has found up to fourteen. The fact that *lineatum* lays several eggs on the same hair means that the fly is more restful on the animal, and observers seem agreed that this fly does not annoy or terrify the cattle nearly as much as *bovis*. Hadwen[32] even thinks that most of the *lineatum* eggs may be laid when the animal is lying down, and says, "With regard to any signs of irritation on the part of the cattle, when they were lying down, as far as one could see they showed no annoyance. While standing up it was a different matter, since the fly was forced to grasp the hairs while ovipositing. The older animals would kick, switch their tails, and occasionally lick the part; but in some situations they could not reach the part with their tongues. The cows did not run at all, and it was only the younger animals which did so."

The eggs are laid on different parts of the body. Riley noted the flanks and round the heels as favourite places, hence the common name in the United States for this fly is the Heel Fly. The legs are the chief place. A female may lay a large number of eggs. Gläser found that *lineatum* laid 538 eggs in forty-eight minutes on a calf confined for experiment. Hatching is as with *bovis*, and, most probably—we have no definite proof of any other way—the maggot directly enters the skin, and the wandering, described above for *bovis*, follows, gullet and other organs being reached. Finally tumours appear on the back each with its opening to the outside. The full-fed larva falls away from its host, and pupation and issue of the adult fly are as in *bovis*.

Harm done by and Loss due to Warble Flies.

It is difficult to give exact figures, but over the country generally there is a very great annual loss due to Warble Flies This great loss—waste at any time, but inexcusable waste in

a war period—is caused in several ways: The gadding cattle run the flesh from their bones, and the excitement due to the presence of the fly has a bad effect. Where milk cows are excited and gallop about, the milk suffers in quality and quantity. One of the best-known veterinary surgeons in Lancashire, speaking of the udders getting bruised by striking against the body as they swing from side to side during the headlong flight of cows, told me that he had often been witness to this harm, that "bruised udder brings the flesh off the cow terribly, and that sometimes gangrene follows, ending in septic poisoning and death of the cow." In-calf cows may abort owing to excitement and over-exertion. Again, cattle with many larvæ in their back cannot graze at ease, and do not thrive as expected.

Still, again, after the cattle have been slaughtered there is further loss in dressing the carcases, from what has been called "licked beef" or "butcher's jelly." Discussing this subject in her work on the Warble Fly,[19] Miss Ormerod quotes Mr Harry Thompson the Veterinarian thus: "What causes the damaged meat or beef is the chronic inflammation set up by the warbles in the skin, which extends to the connective tissues, thence to the flesh, producing the straw-coloured, jelly-like appearance of a new-slaughtered carcase of beef, which, in twelve to twenty-four hours, when exposed to the air, turns a dirty greenish-yellow colour; and this spoils the beef, having a frothy discharge oozing from the surface with a soapy-like look." On this same subject Miss Ormerod quotes another opinion: "In the worst part of the warble season I could get bucketfuls of inflamed tissue, commonly called by the butchers 'jelly,' cut and scraped from the carcase after the hide is taken off. The formation of this matter must be a great drain on the health, condition, and quality of the animal, and must be a grievous loss to somebody."

Then there is the great annual loss from hides spoiled or ruined for tanning purposes and for the purposes for which the best leather is used (Fig. 14). I have in my collection two such tanned hides which, from the numerous holes in them, suggest the seats of a cane-bottomed chair, and while of course these are much worse than the averagely-spoiled hide, yet the general loss to hide merchant and tanner is great. A loss on a seventy-pound hide can easily be a halfpenny or a penny per lb., and if 3s. to 5s. represent the loss on one warbled hide, the loss in a year over a high percentage of warbled hides in a busy market can reach a large sum. In Glasgow market, for example, during 1918, twenty-one per cent of the hides were warbled. Of over 53,000 hides that passed through the Edinburgh market in 1918, 37 per cent were warbled. Similar reports

can be quoted from Dundee, Aberdeen, &c., and it would be easy to quote figures showing the great money loss over the country, which no one disputes.

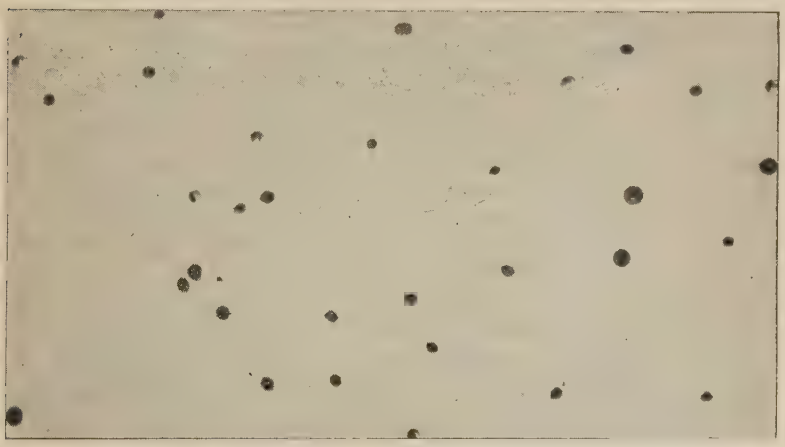

Fig. 14.—*Piece of hide of ox after tanning, showing the warble-holes, natural size. (Original.)*

Fig. 13 is an example of the work of an allied *Hypoderma* on deer. Glove-makers use the deer-skins to a great extent, and it is usual to find that large numbers of skins are more or less injured, their value being often reduced by quite a half.

Means of Prevention and Remedy.

1. *Preventing the flies from laying their eggs.*

There have been many experiments, especially in the United States, whose purpose has been to keep flies of different kinds and habits away from animals by some spray or dressing which, being disagreeable, would repel the flies. To get a successful repellent—that is, one which will really protect the animal—is a very difficult matter, for the repellent must possess three qualities: it must disgust the flies; it must not hurt the animal to which it is applied for protection; and it must retain its protective qualities for some reasonable time, otherwise it becomes impracticable and impossible to apply the treatment. It has to be admitted that in our British literature on the Ox Warble Flies, several dressings are named as having been not only satisfactory, but extremely satisfactory in preventing the Warble Flies from approaching the cattle and from laying their eggs; and we ourselves know cases at present

where a practical immunity from warble is claimed because of the dressings applied. I have read and have been told that "dressed" animals grazed peacefully on one side of a hedge, while "undressed" beasts on the other side of the hedge were galloping about. Well, for three summers in succession Carpenter experimented on cattle with the various dressings, applied sometimes to the back alone, sometimes to the legs alone, and sometimes all over the body, and found them so ineffective and useless that he abandoned summer dressings for the time and sought some other treatment. Carpenter, in contrasting the ineffectiveness of the dressings used experimentally by himself and his colleagues for the summer dressings of cattle and their reputed value elsewhere, indicates climatic difference as a possible factor, but also points out that "one may watch for many days without seeing the cattle gad, and that this fact may partly account for the alleged benefit of the dressings; further, most stock-owners who dress their cattle in summer also carry out the systematic destruction of larvæ in winter and spring."

The three dressings used in the experiments were—

Carbolic "Dip" Dressing;

A smear composed of train-oil 1 quart, sulphur 4 oz., spirits of tar 4 oz. (this for long has been a greatly recommended smear);

Paraffin Emulsion.

In repeated sets of experiments the experimental animals were dressed from May to September, and in some cases from June to September: some of the animals were treated every day, some once a week, some twice a week. When in the succeeding springs and summers the animals used in the experiments came to be examined for warbles, the number of warbles found attested the ineffectiveness of the treatment. One set of experiments may be quoted,[29] viz., the train-oil, sulphur, and spirits-of-tar smear named above. This smear proved hurtful to young calves, making the hair fall and the skin sore, but its application to yearlings or older cattle did little or no harm. The smear, as will be seen, did not prevent warbles.

Train-Oil, Sulphur, and Spirits of Tar.	Number of Warbles when examined next Spring.	Average.
Three calves smeared *on back and flanks* once a week — May to September 1904.	9 7 5	7
Four calves smeared *on legs* once a week —May to September 1904.	19 13 15 5	13

Train-Oil, Sulphur, and Spirits of Tar,	Number of Warbles when examined next Spring.	Average.
Three calves smeared *all over* once a week—May to September 1904.	13 17 16	15·33
Six yearling heifers smeared *all over* twice a week — May to September 1906.	6 13 12 13 6 8	9·66
Six yearling heifers smeared *all over* every day—May to September 1906.	9 39 19 39 10 65	30·16

To sum up as to the value of repellents as a means of preventing Warble Flies from laying their eggs, it can be said that in Britain we have no direct experimental evidence (all the factors being known) that this method of fighting the Warble Flies is satisfactory and to be recommended. On the general subject of repellents against flies and other insects, evidence can be brought forward of their proved usefulness. There still remains the possibility of the discovery of a satisfactory repellent against Warble Flies in Britain, but the practical difficulties attendant on the repeated dressings cannot be forgotten.

2. *Remedial Measures.*

(*a*) *Killing the larvæ in the warbles and so preventing the development of the fly with its new generation.*

It will be remembered that the larva lies in the warble with its breathing-pores towards the outside (Fig. 12), and a number of different dressings have been in use for the purpose of choking up the spiracles of the larva and so killing it. The dressings used were for the most part sticky or greasy ones, applied in the spring once the openings of the warbles to the outside had become visible. Miss Ormerod, in her reports, quotes opinions in favour of some of the dressings, and mentions incidentally, in her pamphlet on the Ox Warble Fly, that in some of the lone parts of Western Ireland old women known as "Charmers" were called in on occasion to cure warbles by "incantations." The real standby, however, of these witches was not the incantation, but some old butter or lard which they secretly applied to the

openings of the warble. While, as just said, there is written testimony in favour of certain substances used to kill the larvæ, experimental evidence has not so far given very encouraging results. Carpenter's experiments[29] with dressings commonly favoured deserve to be known. The experiments were done with five yearlings that were warbled; these yearlings were so tied up that they could not lick off the dressings. The hair round the warbles was cut before the dressings were applied.

Dressing.	No. of warbles dressed, April 14.	No. of times dressed.	Number of larvæ found on April 29.		Effect of the dressing on the back of the animal.
			Living.	Dead.	
Turpentine	3	2	1	2	Back very sore; skin began to crack and peel. Animal unsightly.
	2	1	2	0	
Paraffin	3	2	2	1 *	Back very tender; where paraffin trickled down back hair fell off. Animal unsightly.
	2	1	2	0	
Cart-grease	3	2	3	0	No harmful effect on back.
Cart-grease and sulphur	2	1	0	2	Animal very unsightly; back badly cracked around warbles, and yellow matter could be pressed out.
Tar	2	2	1	1	Back not injured.
	2	1	2	0	
M'Dougall's smear	3	2	1	2†	Back slightly tender.
	2	1	1	1	
Salt and buttermilk	2	1	2	0	No effect on back.

* Crushed by the animal rubbing itself.
† One of these crushed by the animal rubbing itself.

Nearly forty other dressing materials have been experimented with, but so far nothing for killing the maggots can be recommended without some drawback. It appeared at first that a dressing recommended by Mr E. Kennedy, Straffan, Kildare—equal parts of Archangel tar and paraffin oil—was going to solve the problem; but unfortunately more extended trial with it showed that, while it killed the larvæ, it made the skin very sore and destroyed the hair. Some of Miss Ormerod's correspondents wrote to her in favour of mercurial ointment as a dressing for individual warbles; but mercurials are too dangerous to be used without special knowledge.

Summing the evidence and experience of the method of killing the larvæ in the warble, one may say that experiments are still very justifiable in the endeavour to obtain a suitable dressing; but even if such be found, this remedial measure would nearly always be subsidiary to and not so satisfactory as—

(*b*) *The squeezing the larvæ out of the warbles and killing them.*

There can be no doubt that this is the best annihilative measure in fighting the Ox Warble Flies. There are practical difficulties sometimes in the way of practising this measure with every animal, but there is a mass of evidence—practical and experimental—in favour of its great usefulness, and of the steady reduction in the number of warbles, where the pressing-out and killing method has been persisted in for several years in succession. In several Continental countries attempts have been made to free the cattle from the attacks of Warble Flies by concerted action, and this method of squeezing out the larvæ has proved very effective. The 'Journal of the Board of Agriculture and Fisheries' for November 1910 gives a résumé of such efforts as contained in the 'Bulletin de la Société d'Agriculture,' Nos. 3 and 6, 1910. The statement in the 'Bulletin' regarding Denmark may be quoted: "In Denmark a local Agricultural Society in Jutland has carried on a systematic campaign since 1901. This Society each year divides all the cattle of the district into ten groups, and places each group under charge of a man who is employed to visit all the animals in his group from four to six times and extract the maggots. A special extractor is used for making the incision in the warbles, and the slight wound thus caused heals much more rapidly than the perforation made by the maggot. In 1902, 22,394 larvæ were extracted from the warbles at a cost of £16, 2s., or one penny per head of cattle. From that time the number of warbles decreased progressively, more than half of those extracted in subsequent years coming from the small number of animals that had been newly acquired. The number of cattle treated has not varied greatly from year to year, and the decrease in the prevalence of warbles is shown by the fact that in 1909 from 2290 cows and 1585 calves examined, only 5042 larvæ were extracted. The cost was £7, 10s., or less than a halfpenny per head of cattle. Excouraged by these results, other districts in Denmark have undertaken the systematic destruction of larvæ in warbles." In some parts of Central Europe, before the war, petitions for legislative action to compel destruction of larvæ have been sent in to the governing authorities, and in other parts of Central Europe compulsory legislation is already in force.

That horrible word "Compulsion!" Familiarity with it in

recent years has made us like it none the more. To interfere with a farmer's stock is not pleasing to people who delight in freedom. Still, the waste and loss due to Warble Flies are such that something should be done. Specially, too, it is bad that careless or not interested stock-owners should be the means of keeping up the infestation, penalising other farmers who, by regular destruction of larvæ and in other ways, strive to keep the Warble Flies in check. To obtain success the measures to be practised must be general. Is it too much to expect that our Agriculture Colleges and Societies, by some anti-warble propaganda campaign, could succeed in establishing an enlightened agricultural opinion that would make it a matter of discredit and a sign of bad practice to expose in the sale-ring cattle infested with warbles? The alternative is some kind of legislation.

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DRAUGHT HORSES IN THE WAR

By Professor JOHN R. M'CALL, Major, R.A.V.C.

Before entering into details of the various types of draught horses employed in the greatest of all wars, let me first correct a widespread belief that the *rôle* played by the horse, the noblest of all domesticated animals, has been insignificant. One constantly hears such expressions as, "But surely horses have ceased to be used in modern warfare: one never or very rarely hears of cavalry, and isn't all the rest done by motors?" It is true that in France the methods of trench warfare rarely afforded the opportunity for cavalry coming into operation, but this does not hold good for the other theatres of war, and in the Eastern campaign certainly their utility was paramount. In France, apart altogether from cavalry, we had the various branches of the Artillery, Field, Horse, and Garrison, employing thousands upon thousands of teams of horses, and the Transport Service with its huge ramifications, carrying ammunition, stores, rations, &c., into every part of the battle zone. These services were rendered chiefly by the light and heavy draught breeds. In August 1914 the Army possessed about 25,000 horses, mostly home-bred. Towards the autumn of 1918 probably a million would more closely represent the total. Do these figures tend to prove that the horse in war has been relegated to a back shelf, having outlived his day and generation? Land and Air Forces have been exploited, and rightly so; but who has taken up the case of the poor, patient, plodding, uncomplaining horses and mules who have so nobly done their part amidst suffering and hardship that can never be realised except by experience?

In the early days of the war large numbers of horses were impressed in the United Kingdom, but in order to meet the ever-increasing demand on all fronts, and to make good wastage, the Remount Department had to draw largely from foreign countries, both East and West. The United States and Canada naturally were able to supply large numbers of the raw material, and from these sources most of the draught horses employed in the war were obtained.

The light draught horse as produced in Great Britain has proved a somewhat negligible quantity, the reason being that no serious attempts have ever been made at home to breed this class of animal. The result was that the so-called light

draught horses procured from home were few in number and chiefly misfits, obtained by crossing Shires or Clydes with lighter breeds. Half-bred weighty hackneys, Cleveland bays, and underbred weight-carrying hunters of the Vanner type, with others, made up the remainder. A proportion of these did good work, but others were unsatisfactory. It may be mentioned that a considerable number of half-bred hackneys have been remarked upon, quite easily recognisable by their colour and action: up to 16 hands high; strong and active to a degree; good doers and serviceable artillery horses. This type is also well recognised and appreciated abroad, particularly in the Italian army. Quite recently the representatives of the Italian and Japanese Governments purchased in Great Britain 28 and 25 hackney stallions respectively for the purpose of breeding artillery horses.

Surely with the increased knowledge gained in this war of the importance of the light draught breeds in general, some concerted action may be taken to cultivate this class of animal at home. His utility in many spheres is unquestionable, and in team work he can perform nearly any duty necessitating weight and activity. Numerous cases can be cited of home-bred light draught teams that have done excellent work in the R.F.A. and R.H.A., going into action and clearing out with the limbers at the gallop. They were horses of 15·2-16 hands high, and resembled the old London bus-horse type.

It can safely be said that the light horse imported to the Western theatre of war from Canada and the States has been an outstanding success. True, on arrival in England he looked a somewhat nondescript animal (Fig. 15), raw-boned, shaggy, ragged hipped, and shoeless; a plain and rather common-looking type, but possessed of depth of body, compact back, strong shoulders and thighs, rather large in the skull and strong in the crest, but having good wearing legs, bone of fairly fine quality, big open feet, and little hair about his heels. A few weeks' sojourn in a Remount Depot, where the newcomer is well tended and conditioned, is sufficient to remedy his nondescript appearance and turn him out a transformed creature (Fig. 16). The natural life which he led in his native country gives him a physique which is exceptional. The complete freedom of running at large all the year round, combined with the fact that his constitution has never been interfered with by pampering, renders him highly responsive to generous treatment. In colour, greys and blacks predominate, although chestnuts, browns, and bays are not uncommon. Standing up to about 16 hands high, he gives an impression of vitality and activity, with robustness of constitution, that cannot be denied. Thousands upon thousands of these horses, all

of similar type, although varying in height and weight, have arrived. How are they bred? Well, one has only to see a number to recognise the hall-mark of the French Percheron blood, crossed with the native American mares (usually small light mares) and graded. Colour, conformation of head and neck, as well as muscularity of shoulders and thighs, are typical. In some respects they differ from the pure Percheron. They have finer quality bones, longer pasterns, and are not so liable to calf-knees and sickle-hocks as many specimens of the

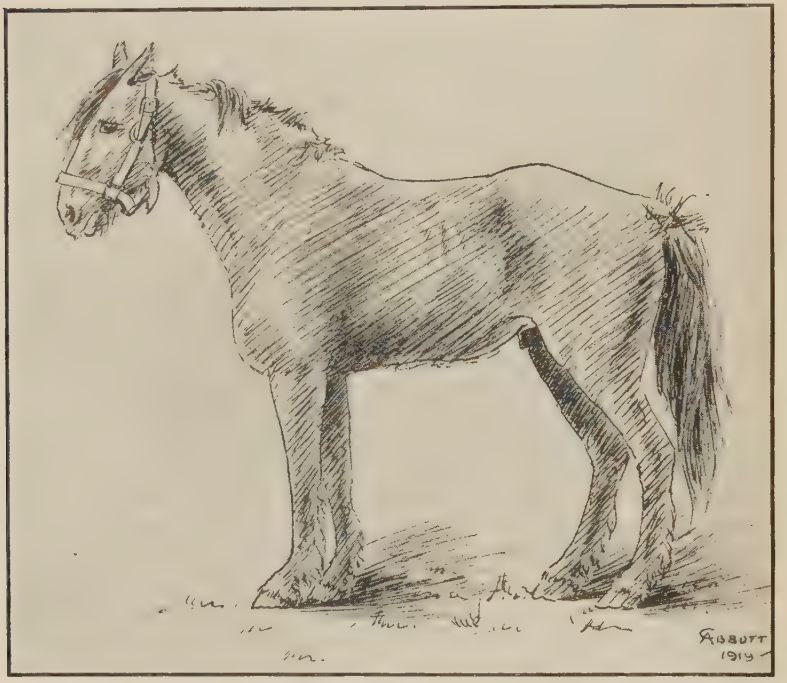

Fig. 15.—*Sketch of light draught American-bred Horse, as seen on disembarkation.*

pure Percheron and Boulonaise breeds I have seen in France (Figs. 17, 18).

If carefully handled he usually proves of docile temperament and quickly comes to his work. In the trying conditions of active warfare, exposure to severe weather, hard work, and frequently receiving very scanty rations, he stands up well. In this respect (and probably this is the keynote to his success) he excels our home-bred horse, whose years of comfortable life, good stabling, and regular work have to a certain degree unfitted him for the great hardships and exposure of modern and protracted warfare.

In team work the light draught cross-bred Percheron has proved himself the finest field artillery horse of the war (of course it must be borne in mind that the preponderance in numbers of his class was very great). He is generous and determined in his work. Teams pull well together, and this is a great factor where heavy ground is encountered, demanding both activity and power to negotiate difficulties. Personally, I have no doubt that these game-pulling properties are inherited from the Percherons. I have seen, time and again,

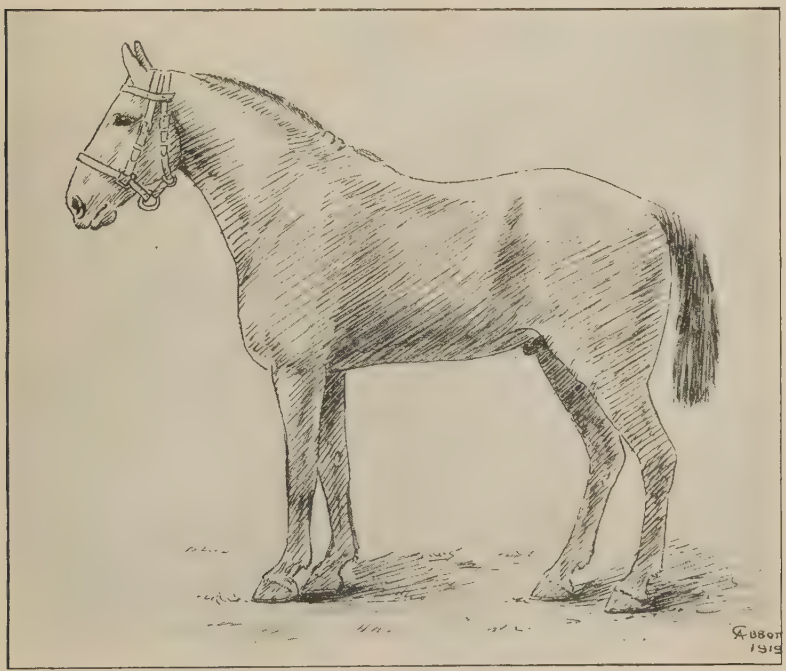

Fig. 16.—*Sketch of light draught American-bred Horse (same animal), when trained and conditioned.*

French farm horses gamely tackling, and after many unsuccessful attempts ultimately shifting, loads that British heavy draught horses would never be asked to tackle.

Tremendous exertions may on occasion be a necessary evil in war-time, but under peace conditions habitual over-exertion can only result in overshot fetlocks, contracted tendons, and strained hocks. These are defects frequently observed in the French-bred Percherons. They may be credited either to an inherited tendency of the breed, or to the fact that the French horse is habitually asked to over-exert himself in the ordinary course of work. Probably both factors count.

In addition, the high wrinkled crest, typical of the breed, often commences at the withers, and is a disadvantage where heavy collar work is necessary. Firing and breaking of the skin frequently result.

Heavy Draught Horses. — Many heated arguments have centred round the question as to which breed of heavy draught horses has proved of most value in the war, and the more debates one hears or takes part in, the more convinced one becomes that the bald question cannot be answered as con-

Fig. 17.—*Light draught American Percheron cross.*

clusively as some people imagine. It must be admitted that the Clydesdale, Shire, and heaviest types of cross-bred Percherons imported from America have supplied most of this class of animal. In a recent debate among a large class, chiefly of artillery and transport officers who were just down from the Front, and who had mostly seen from two to three winter campaigns in France, the evidence was most conflicting. All three breeds had their supporters and detractors. However, this was not surprising, considering the varied conditions under which these opinions were formed. For example, if we contrast the life of the heavy draught horse on the strength of a transport unit, like the divisional train, with that of a heavy

draught attached to the Royal Garrison Artillery, we find that the former is, generally speaking, well looked after, has comfortable horse lines, and if rations are plentiful anywhere he gets them. The work he has got to do is by no means excessive, and he does it under conditions approximating home labour. The artillery heavy draught horse, on the other hand, especially during fighting movement, cannot receive similar attention. His work often necessitates very long hours under exceptionally trying conditions, and too often his rest period is passed under

Fig. 18.—*Light draught American Percheron cross.*

excessive discomforts as regards stabling and general care. The typical lines often degenerate into a quagmire of mud, in which the horse stands up to his knees in open field or orchard, until, when dead-beat, he may lie, thereby only increasing his own discomfort. If rations are scarce, or difficult to obtain from any reason, he is the horse most likely to suffer, and probably when he most requires all the sustenance he can obtain.

It is no wonder that the opinions as to the relative values of the various breeds, formed under such divergent conditions, should themselves be widely divergent. Then, too, owing to the system adopted, horses tend to gravitate to the work most

suitable for them; but the natural predilection of the transport officer to any particular breed also plays its part when distribution is made at the remount railheads.

Taking the foregoing examples as extreme contrasts, there exists between them all degrees of comfort and discomfort. The general tendency of opinion would seem to favour our ordinary home types for the better conditions of life and service, and the less hairy, hardier, imported breeds for the more trying conditions.

In the earlier stages of the war large numbers of home-bred, heavy draught horses were exported to France, chiefly Clydesdales and Shires, either pure or cross bred. As can be readily understood, various types were represented, and herein lies another reason for the apparent diversity of opinion. Considering first the case of the Clydesdale, it is quite agreed that the blocky type, thick and sturdy, with bone and substance, about 16·2 hands high, and weighing close on 14 cwt., round in the barrel, broad in the chest, with muscular loins and deep broad thighs, has proved a distinct success, and has done his bit nobly and well. Unfortunately quite a considerable proportion of this breed were built on different lines. Quality was the keynote—an admirable objective in any breed if not carried to excess, for, undoubtedly, quality beyond a point can only be obtained at the expense of the general physique.

France is no place for the tall, narrow, wasp-waisted, close-moving variety of Clyde, even if he has beautiful silky hair, long pasterns, and wears himself with the dignity of an aristocrat. A rapid advance, dragging guns and stores through quagmires, standing exposed to piercing winds and drenching rain, irregular hours, forage supplies cut down to subsistence point, all tell their inevitable tale. The aristocrat has not the staying power necessary to carry him through, and is down and under while his plain but sturdier brother is able to carry on.

Apart from great hardships, the tall leggy Clydesdale is neither so active nor so able to get out of difficulties in heavy going as is his shorter, blockier brother. The latter has been deservedly popular when working in teams attached to the heaviest horse-drawn guns.

Many examples could be given of teams so composed, that have been engaged for long periods in this work, and have managed to keep the flag flying. On several occasions I have witnessed Clydesdales carrying off premier honours at Divisional, Corps, and International Army Shows in France, in competition with both Shires and Percherons, and the awards were justified by merit.

The Shire Horse, like the Clydesdale, has done good service,

and as a transport animal has been equally popular, but here again, even more than with the Clydesdale, a lot has depended on the type. The medium-sized wedgy sort, about 15 cwts., with short legs, has done best, provided he has not been too lavishly adorned with coarse thick hair on the legs. This undoubtedly has proved a bugbear, predisposing to grease under the muddy conditions of warfare.

Excellent teams of Shires have been formed for heavy artillery work, and, when properly schooled and skilfully handled, have over and again proved their worth. The necessity for more careful handling and more expert horsemanship must be kept in mind. It might truly be remarked that skilful handling appears to exert a much greater beneficial influence on teams of Shires and Clydes than on teams of heavy draught cross Percherons. The latter are more phlegmatic, more difficult to upset, and much less intractable when things get out of gear. This fact in itself is another explanation of the apparent diversity of opinion on the relative merits of the various breeds.

On road transport work the heavier types of Shires and Clydes have been most serviceable. Their weight affords them an advantage. But here the fact should be emphasised that the tremendously big, weighty, heavy draught horse has been a comparatively useless animal in this war. I refer to huge ungainly creatures, 17 to 18 hands high, weighing nearly a ton, and as clumsy as they are ineffective. They are too slow in work, and much too big to keep in condition on the ration allowed to heavy draught horses. This type may be ideal for pulling a brewer's lorry on the paved streets, but in warfare they "melt like snaw aff a dyke," and are a source of worry and concern to every one who has anything to do with them.

Heavy Draught Cross-bred Percherons have also been largely employed in this war. Since 1916 they have quite overwhelmed the Clydes and Shires numerically. They might be termed a heavy edition of the Percheron cross-bred light draught, already described. Chiefly reared in the United States and Canada, they are the produce of Percheron stallions and the native mares, graded up, and carrying $\frac{3}{4}$ to $\frac{7}{8}$ Percheron blood in their veins. (Figs. 19, 20.)

These horses are of similar colour to their light draught relatives, but have more bone and substance, and weigh from 14 to 16 cwts. In appearance they are deceptive, both as regards height and weight, and they seem to improve the closer one gets to them. This is probably due to the scarcity of feather on their legs, and to their general air of gaiety and activity in action. Standing about 16·2 hands high, they are mostly well coupled up; powerful over the loins; deep in the

barrel; broad at both ends; have good forearms and second thighs, and nice clean legs. Taken as a class, they are remarkably uniform, although occasionally we meet some bigger animals, more of the Suffolk Punch type, inclined to be too heavy of body and light of bone, or at least to convey this impression.

In general appearance the heavy draught Percheron is not nearly so impressive-looking as our larger Shires and Clydes, but he is strong and active, hardy to a degree, a grand

Fig. 19.—*Heavy-draught American Percheron, weighing* 13 *cwt.*

feeder, and can do well on bare rations. He has a sound constitution, is easy-minded in his work, and stands up well to hardships.

The scarcity of hair on his legs is an undoubted advantage in winter time, and he is rarely affected with grease. Largely employed in team-work attached to the guns of the 60-Pounder Batteries R.G.A., his utility has been widely commented upon, and the appearance of a well-matched team of blacks or greys gives a workmanlike impression.

In the stress and trials of warfare, debility claims many more victims than any other known cause. This is dependent upon many circumstances—*e.g.*, severe and continuous work, perish-

ing weather, working and standing in deep mud, defects in general animal management, and restricted rations. Thousands of horses are thus rendered ineffective, and have to be removed from the active zone to veterinary hospitals and convalescent horse depots, where they undergo treatment—rest and special feeding. In some cases two or three months may elapse before they regain their wonted vigour. Such a happening on a large scale may render an army immobile, and, in any case, must be a severe drain on reserves both of food supplies and horses. It

Fig. 20.—*Heavy-draught American Percheron, weighing* 15 *cwt.*

is therefore apparent that in the production of Army horses, of whatever breed, the chief factors to keep in view are physique, and freedom from hereditary diseases. Moderation in build and compactness must also play a leading part.

Considerable attention has been directed of late to the possibilities of breeding suitable Army horses in Great Britain from imported Percheron sires. A number of pedigreed stallions and mares have already been introduced, and active interest in the movement is being taken by the Army authorities and others. How this infusion of new blood will affect either the established pure-bred strains or the general purpose animals already in the country is a very wide and difficult question. It should, after

all, be remembered that the Percheron has, as it were, been standing at the door of the United Kingdom for centuries, and never obtained a footing in our country until favoured by the abnormal conditions set up by this great war. It has been worth the while of American breeders to import them and use them largely for their country—a very much more difficult task than importing and using them in our country would have been. It cannot be argued that our horse-breeders are less progressive or less wide-awake to their own interests than the American breeders are. The Percheron is undoubtedly a very prepotent breed, and for grading-up purposes—for the improvement of scrub stock such as existed in America—possesses desirable qualities; but the effect of introducing such a prepotent strain among our more highly-developed breeds may not be at all so satisfactory. The Percheron in France has undoubtedly ousted all other breeds, but the many types which can be seen daily on most French farms, and particularly on the French streets, possess faults at least as glaringly obvious as those which characterise our own breeds. From the point of view of grading-up ordinary stock in our country the Percheron might prove successful, but it must be borne in mind that the undertaking is more or less experimental, and his superiority for this purpose over our own strains, and for our conditions and country, is yet to be proved.

War conditions have without doubt revealed certain defects in our heavy breeds of Shires and Clydesdales, and what is true of war conditions must also be true to a certain extent of peace conditions. There is in this a plain hint and warning to our home breeders. Are we, with our imposing stud-books and lengthy pedigrees, who pride ourselves on being the premier stock-breeders of the world, to be indebted to a strain of imported horses, which has established itself in its own country by the haphazard methods more or less common to all French districts, where the rule is for horses to be kept entire and to be used promiscuously for breeding purposes?

Every one interested in breeding is aware that for years some of the show points of both Shires and Clydesdales correspond to those which have seriously handicapped the breeds in France. In more recent times there has been a tendency to get away from these points, and to lay emphasis on the more purely utility considerations. War experiences have shown the vital necessity of eliminating those features which, while possessing a value for the showyard alone, are a source of danger and a serious handicap to the breeds.

THE ORIGIN OF THE AYRSHIRE BREED OF CATTLE.

By CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, Lesmahagow.

THE Ayrshire can be traced back as a recognised and established breed of cattle to the later half of the eighteenth century, since there can be no doubt that the breed as we have it now (with whatever modifications may have been introduced in the intervening period) is directly descended from those cows which are described by various writers as the Dunlop cattle.

That those cattle owed their special qualities to their descent from animals of some alien breed is generally regarded as certain; and attention has been chiefly focussed, by those interested in the origin of the Ayrshire, on the question to what breed or breeds those animals belonged. I shall endeavour, at a later stage, to discuss this point. But it seems desirable first to examine a prior question which has so far escaped consideration—to ascertain, as far as possible, what the cattle were which existed before the alien cross was introduced, and furnished the stock with which that cross was mated.

It is probable that Scotland contained more than one breed of cattle from a comparatively early period. A seventeenth-century traveller[1] reports that "Their cattle are only representatives of what are in other countreys, these being so epitomised that it is hard to know what class they relate to."

That polled cattle occupied considerable districts, and that these were the progenitors of the Galloway and Angus breeds, does not admit of question. The authority just quoted tells us that "their neat are hornless";[2] and polled cattle of the Galloway breed were no doubt numerous in Ayrshire. It is probably to these that Ortelius refers when he says in 1573 that "in Carrick are oxen of large size, whose flesh is tender, and sweet, and juicy,"[3] since it is not the Ayrshire but the Galloway breed that distinguishes "Carrick for a coo." Remains of polled cattle have been found in the Roman Camp at Newstead. But while, of course, we cannot rule out the possibility that polled cattle may have been

[1] Thomas Kirke, 'A Modern Account of Scotland by an English Gentleman,' 1679, p. 2; Hume Brown, 'Early Travellers in Scotland,' 1891, p. 255.

[2] *Loc. cit.*, p. 256.

[3] Quoted by Thomas Farrall, 'Highland and Agricultural Society's Transactions,' Fourth Series, vol. viii., 1876.

crossed with the imported sires, and while this possibility may seem to receive corroboration from the statement (for which I find no written though some verbal support) that polled Ayrshires were common even during last century, there is no evidence that polled cattle were widely kept for dairy purposes, and no likelihood therefore that they were at all frequently crossed with bulls introduced in order to improve milking cattle.

On the other hand, all the records point to the fact that the most numerous breed of cattle in Scotland was what is spoken of as the Kylo; and it is worth while to consider what the Kylo was.

It is usual to identify the Kylo with the West Highland Ox; and whatever modifications may have been made in the West Highland breed as we now have it, the Kylo was undoubtedly the foundation stock of the Highlands of Scotland; for Kyloes were the prevailing unimproved domestic cattle. But it would be impossible, in view of such knowledge of the Kylo as we have, to identify it with the existing West Highland breed. To begin with, the Kyloes are indifferently termed "the black cattle"; and while black colours preponderate among the Highland cattle of certain districts, this is by no means generally the case—nor is there any reason to suppose that it ever was so. But, further, the accounts of the Kyloes that we have are inconsistent with this too ready identification of the breeds. We have, for example, in the end of the eighteenth century, the following description: "Their colour is generally black, with small white horns finely tapered and pointed with black; they are very short and dangerous, and incline forward."[1] And this is confirmed in another account, ten years later, by Lawrence, who regards the Kylo as one of the "two original species of neat cattle in Scotland" (the other being the polled), and describes it as "black, brindled, dun, brown, red—black being the more favourite colour in Scotland; in form, flat and deep, like the short and middle-horned stock; very small and hardy, with small upright or middle-length horns."[2]

Rowlin tells us that the Kylo or "Highland breed are the smallest of any in Great Britain or Ireland"; and this statement, made by a writer familiar with British and Irish cattle, could by no possibility apply to the present West Highland breed. Rowlin emphasises the fact that "the Galloway kind . . . are larger than the Highland."[3]

The probability indeed is that the West Highland breed, as

[1] Joshua Rowlin, 'The Complete Cow Doctor,' p. 56. Walker, Cockermouth, 1794.

[2] John Lawrence, 'A General Treatise on Cattle,' 1805.

[3] *Loc. cit.*, p. 62.

we now have it, did not exist until a later date, and that the Kyloes or "black cattle" were the prevailing breed throughout those districts in which the polled cattle were not predominant.

It is therefore desirable, in a study of the origin of the Ayrshire breed, to find out, so far as we can, what kind of animal the Kylo was.

The numerous cattle bones found at the Newstead Roman Camp indicate the presence there of various breeds of cattle; but "the majority of the bones from the older deposits belong to the Celtic ox (the so-called *Bos taurus longifrons*)," [1] and "several of the small skulls have all the characteristics of the Celtic shorthorn of Continental lake-dwellings, the horn cores curve forwards without either bending downwards or upwards, and the frontal region is long and relatively flat. As the cannon bones from Newstead are shorter and finer than those from Schlossberg and certain other Neolithic settlements on the Continent, the Scottish variety of the Celtic ox was probably unusually small." [2]

These remains, therefore, show the prevalence in Lowland Scotland, during the Roman period, of a race of small cattle having the general characters of the Celtic Shorthorn. "Professor Hughes indeed maintains that the Romans found that breed here, and no other." [3]

What interests us chiefly in this fact is that up to recent and even present times, a similar race is found in those parts of the United Kingdom where agriculture has been least developed, and where stock improvement has made least progress. The most conspicuous surviving branch of this race is to be found in Shetland.

The characteristic native cattle of Shetland are, and have long been, small in size, and prevailingly black or dun in colour, with fine horns projecting forward at the base. It is an interesting and suggestive fact that a bovine shoulder-blade, unearthed by me in the kitchen-midden of the ancient Pictish broch at Sumburgh, has been recognised by Professor Cossar Ewart as belonging to a bovine of less than 40 inches in height, and exactly similar to a corresponding bone found at the Newstead Camp.

We thus have still in Shetland a small race of cattle similar to those whose remains are found at Newstead.

But an exactly similar breed of cattle appears to have existed in the Island of Arran until the middle of last century. The accompanying reproduction of Howe's portrait of the

[1] Ewart, 'The Animal Remains at Newstead,' p. 374. Maclehose, Glasgow.
[2] Ibid., p. 375.
[3] Speir, 'Early History of the Ayrshire Breed of Cattle,' p. 273. Ayrshire Cattle Milk Records Committee, 1909.

Arran Cow (1831) (Fig. 21), while probably not more faithful as a likeness than most early animal portraits, is clearly intended to represent a cow of very small size, fine in bone and horn, and with white markings on a black skin, which will recall to all who are familiar with Shetland cattle a disposition of colour very common in that breed. The erect horn alone is a departure from the general Shetland type; and it is a departure not infrequent among Shetland cattle also.

Again, we still find in Connaught a few survivors of a race

Fig. 21.—*The Arran Cow. Howe*, 1829.

of cattle essentially similar. The successful activities of the Irish Department of Agriculture have indeed almost eliminated the breed; and while fifteen years ago many of the cattle of the West of Ireland were of a type similar to the Shetland, successive crosses of Angus blood have now almost completely replaced the ancient breed by animals which are, in all essential features, pure-bred polled cattle. One must, indeed, search for the survivors if one desires to see them; but the accompanying portrait of a cow, less than forty inches high, illustrates a breed similar in all respects to the cattle of Shetland (Fig. 22). The Kerry cow is the improved version of this native Irish breed; and it is significant that the best Shetland cows have a very marked resemblance to the Kerry, as is shown in the accompanying portrait (Fig. 23).

Fig. 22.—*Irish Cow photographed at Renvyle*, 1913.

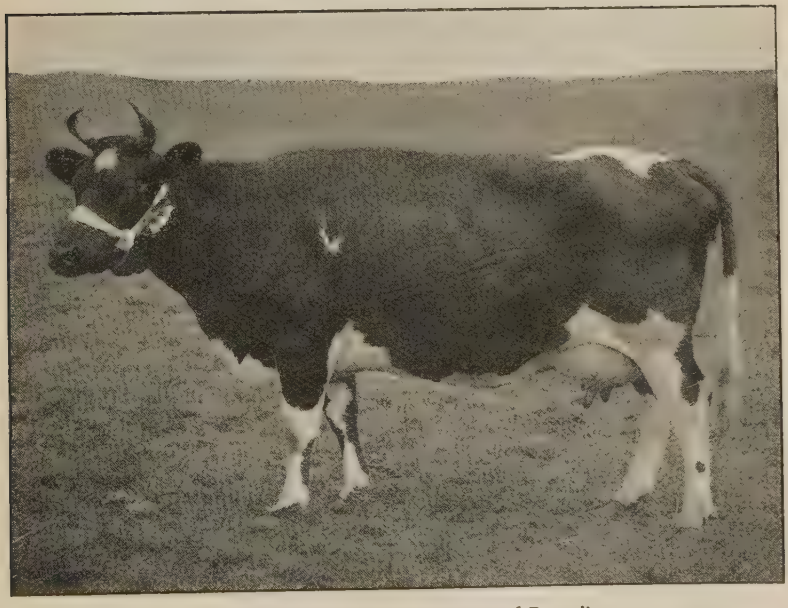

Fig. 23.—*Shetland Cow, "Cissy of Dron."*

An even more interesting survival is to be found in the Island of Lewis. As one travels northward through that island, it is to be observed that the cattle become steadily smaller, and that black becomes the prevailing colour, light duns being infrequent. The cattle are also smaller in horn than those of other districts. In the year 1913, I found in the extreme north of the island—actually at the Callanish Stones—the cow which is represented in the accompanying portrait

Fig. 24.—*Cow photographed in the Island of Lewis*, 1913.

(Fig. 24), which measured just under forty inches, and which might, in every respect, pass for a Shetland cow.

Now all this evidence converging to show that in Roman times we had in Britain a small cow of the Celtic Shorthorn type, and that a similar small cow exists in those districts where least stock improvement has taken place, lends itself to a natural and legitimate inference, that the Shetland, Arran, and Irish cows, and the cow at the Callanish Stones, are the survivors of a race which once was general throughout Scotland. The inference finds confirmation in the fact that this race corresponds closely with the description of the Kylo given by Rowlin and Lawrence at the end of the eighteenth century. The Kylo, therefore, the common indigenous cow of Scotland at the time when the Ayrshire breed was founded, was probably the foundation stock of that breed; and it was a very small fine-horned cow, prevailingly dark in colour, and bearing a

close resemblance to the Shetland cow and its surviving or recently surviving congeners.

This view finds confirmation in the description given by Aiton of the cattle of Ayrshire before the introduction of the Ayrshire breed. "The cows of Cunningham were generally black, with some white on their face, belly, neck, or tail."[1] It should be stated that this description must not be taken as stating in too absolute a sense that the cattle of Ayrshire were all black, for in 1609 we find Andro Craufurd of Baidland

Fig. 25.—*Ayrshire Cow. Portrait published by Aiton*, 1811.

willing "to little Jeane Davidis dochter, the quhit hornit kow or ellis ane vther als guid,"[2] a bequest which endows us with two facts: (1) that there were white or partly white cattle in Ayrshire in the seventeenth century, and (2) that there were both horned and hornless cattle there at that time.

We are left, however, with the general fact that the cattle of Ayrshire, up to the middle of the eighteenth century, were prevailingly black; and we may rest in the belief that they were more akin to the Shetland cattle of to-day than to any other breed. What their origin may have been, or how they came to Britain, are points that need not concern us here. Certain distributions of colour markings, closely resembling those of the Telemark breed—especially the typical white dorsal lines recorded by Aiton and characteristically frequent in Shetland and Irish cattle—undoubtedly suggest a Norse origin; and this is of course historically possible. But here

[1] Aiton, 'General View of the Agriculture of the County of Ayr,' &c. A. Napier, Glasgow, 1811.

[2] Timothy Pont, 'Cunningham Topographized,' quoted by J. Speir, 'Early History of the Ayrshire Breed,' 1909.

we are in the uninteresting realm of unverifiable conjecture, and it is better to leave it at that.

The earliest portraits that we have of the Ayrshire show an animal that has taken on characteristics which distinguish it sharply from the native breed described above; and especially the portraits given by Aiton,[1] which are here reproduced (Figs. 25 and 26), are representations of large cattle, brown and white in colour, strong in frame, and much more fleshy in type than the remaining survivors of the early native breed.

Fig. 26.—*Ayrshire Bull. Portrait published by Aiton*, 1811.

When, however, we turn to the portraits by Howe[2] of the 1st Premium Bull and 1st and 2nd Premium Cows at the Highland and Agricultural Society's Glasgow Exhibition of 1828, we find much more that is suggestive both of the native cattle and of the modern Ayrshire (Figs. 27 and 28). Howe, indeed, draws with a degree of exaggeration of type, which is so marked as to appear intentional, and which is a common weakness of early animal portraiture. But his very exaggeration makes all the more clear what it is that he means to represent; and he plainly intends to show an animal typically and even excessively fine in bone and horn, clean at the gullet, "wedge-shaped," deep-bodied and short-legged, mild in expression, and with what, despite deviation of type, would still be regarded as true Ayrshire character. It is notable that the cow's udder—differing in every respect from that shown by Aiton—is very long, carried forward to a well-developed milk vein, and full behind. The teats, in both

[1] 'General View of the Agriculture of the County of Ayr.' Napier, Glasgow, 1811.

[2] 'Breeds of our Different Domestic Animals,' 1829.

Fig. 27.—*Ayrshire Cows. Portrait by Howe*, 1828.

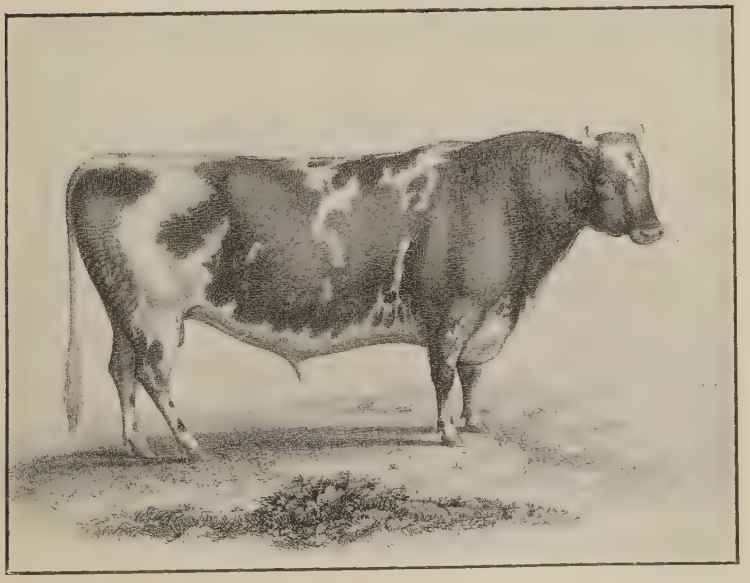

Fig. 28.—*Ayrshire Bull. Portrait by Howe*, 1828.

cases, are made prominent. These portraits correspond closely with the description given by Aiton:[1] "The shapes most approved of in the dairy breed are as follows: Head small, but rather long and narrow at the muzzle. The eye small, but smart and lively. The horns small, clear, crooked, and their roots at considerable distance from each other. Neck long and slender, tapering towards the head, with no loose skin below. Shoulders thin. Fore-quarters light. Hind-quarters large. Back straight, broad behind, the joints rather loose and open. Carcase deep, and pelvis capacious and wide over the hips, with round fleshy buttocks. Tail long and small. Legs small and short, with firm joints. Udder capacious, broad, and square, stretching forward, and neither fleshy, low hung, nor loose; the milk veins large and prominent. Teats short, all pointing outwards, and at considerable distance from each other. Skin thin and loose. Hair soft and woolly. The head, bones, horns, and all parts of least value small; and the general figure compact and well proportioned."

In portraits and description alike we recognise an animal which is, in essentials, the modern Ayrshire, while it also preserves many of the typical features of the Kylo, or Celtic Shorthorn. The whole available evidence thus points to the strong probability that the Ayrshire, as we find it in the beginning of the nineteenth century, is descended from the indigenous Celtic Shorthorn crossed with some other breed introduced for the purpose of improving the native race.

When we come now to consider the question of what breed was employed for this purpose, we find ourselves with only a narrow range of alternatives from which to select. It must be borne in mind that, during the third quarter of the eighteenth century, in which the new breed was created, Scottish farming had scarcely begun to assume its present character. In Ayrshire itself passable roads were only beginning to be made. The farmhouses and steadings were hovels. The system of cropping consisted in alternately impoverishing the land by a succession of corn crops, and leaving it foul and neglected for a period of recovery. There was no root crop, no sowing of grass, no saving of hay. There were no carts. A primitive plough employed the efforts of four horses and three men. There was practically no winter keep for cattle. During the period in question the industry of farming was emerging from a veritable barbarism; and the agriculture of Scotland which, in its best developments, was yet to become an example to the world, was learning the rudiments of improvement from England.

[1] 'General View of the Agriculture of the County of Ayr,' &c., p. 426. A. Napier, Glasgow, 1811.

In Scotland there was no improved live stock; and it was from England or from abroad that any such source of improvement must come.

In England the improvement of cattle had, so far, been mainly brought about by the introduction of Dutch cattle. In the end of the seventeenth century we are told[1] that "the best sort is the large Dutch Cow that brings two calves at one birth and two gallons of Milk at one Meal"; while Mortimer[2] refers to "the long-legged shorthorned cow of the Dutch breed, which is to be had in some places in Lincolnshire, but most used in Kent"; and at an even earlier period references to cattle—particularly in the Eastern counties—are suggestive of the presence of a Dutch cross. In the end of the eighteenth century Rowlin writes of Dutch cattle in terms which indicate that they had by this time become a recognised part of the bovine stock of England.[3] "The largest cattle in the British Dominions are said to be of Holstein or Dutch breed, and the cows of this kind are justly ranked amongst the first for affording large quantities of milk; but their size and delicacy of constitution require better pasture and greater care than can be found in many parts of this kingdom. Therefore they are only partially scattered over a few of the most fertile counties on the eastern shore. In the neighbourhood of London this breed of cattle is very advantageous to the land-holders, on account of the large quantities of milk they give; for, where the land is rich and in an improved state, they are often healthy and thriving; but where the situation is rather of a poor and sterile nature, they are a very unprofitable stock."

From this it would appear that this reputation of these cattle rested rather on their milking capacity than upon any other quality; and this view is confirmed by his description of them. "These are not deemed a handsome race in England, but rather the contrary, from their great disproportion of parts, or their being so much unlike what we call well-made cattle. Their horns are small, short and crooked, inclining upwards, almost to meet each other at the points, their head remarkably small, their countenance rather depressed than sprightly, their necks long and small, also rather light and thin in the shoulder, their backs stand high, and their bellies large, which causes them to hobble in their gait, as if they had more to bear than their ordinary share; they are long in the leg, but not very strong, wide and high in the buckles, and a remarkably short and small tail with very little hair upon it; in

[1] 'Systema Agriculturæ,' by J. W. Gent. Taylor, 1698.
[2] 'Whole Art of Husbandry,' 1707, quoted by Speir, 'Early History of the Ayrshire Breed of Cattle,' 1909.
[3] 'The Complete Cow Doctor.' Walker, Cockermouth, 1794.

colour they much incline to be irregularly pyed or grisseled, which is more peculiar to this breed than any other; their milk is not so rich in quality as some others, but they afford it in much larger quantities than almost any we have; they have much thinner skins, and always require to be kept dry, and from the inclemencies of the weather, more than any other breed."[1]

We further learn from Hale[2] that "the fine Dutch breed have long legs, short bones, and a full body. They are to be had in Kent and Sussex and some other places, where they are still carefully kept up without mixture in colour, and where they will yield two gallons at a milking, but in order to do this they require great attendance and the best of food." An even more important record is that of Arthur Young,[3] who writes in 1770 that "in Yorkshire the common breed was the shorthorned kind of cattle called 'Holderness,' but really the Dutch sort"; and Culley[4] definitely records the importation of Dutch bulls about the middle of the eighteenth century: "I remember a gentleman of the county of Durham (Mr Michael Dobinson) who went in the early part of his life to Holland in order to buy bulls; those he bought were of much service in improving the breed; and this Mr Dobinson and his neighbours, even in my day, were noted for having the best breed of shorthorned cattle, and sold their bulls and heifers for great prices."

Writing at a later date, Youatt[5] says that "The shorthorned cattle, under which denomination are included the *Holderness and Teeswater breeds*, have been supposed to have derived their origin from a cross with some large bulls that were imported by Sir William St Quintin nearly a century ago from Holland into Yorkshire, and in the East and North Ridings of which county the two latter breeds have been long established and deservedly esteemed, . . . and it is from some of that stock, so maintained, that the present improved *shorthorn cattle*, sometimes known as the Durham breed, is supposed by some to be descended."

We have therefore complete evidence that Dutch cattle had been imported into England prior to the seventeenth century (during the whole course of which the import of cattle was prohibited), that they were again imported from the early part of the eighteenth century after the embargo was removed, that they were numerous in the Eastern counties of England, and particularly in Yorkshire, that they were highly esteemed

[1] *Loc. cit.*, p. 45.
[2] 'A Compleat Body of Husbandry,' 1756.
[3] Quoted by Speir, 'Early History of the Ayrshire Breed of Cattle,' 1909.
[4] 'Observations on Live Stock,' 1786.
[5] 'Complete Grazier,' 1864.

for crossing purposes and for the improvement of native breeds, and that they were chiefly valued as dairy cattle.

We now come to the point at which a new breed of dairy cattle was introduced into Ayrshire for the purpose of improving the native breed of milk cows. The introduction of these cattle appears to have been part of that general effort to improve Scottish agriculture which began in the first half of the eighteenth century; and the various statements that are made seem to suggest that it was not confined to a single group of animals.

"Some alteration," Aiton tells us, "was probably made on the dairy stock of Ayrshire by the introduction of a few Dutch or English cows and bulls, of a size greatly superior to the native breed in that county;" and he goes on to say, "I have also been told that John Dunlop, Esq., of Dunlop, brought some cows of a large size from a distance, probably of the Dutch, Teeswater, or Lincoln breeds; and that much of the present improved breed of Cunningham proceeded chiefly from that origin. John Orr, Esq., of Barrowfield, brought from Glasgow, or some part of the east country, to Grougar estate near Kilmarnock, about 1769, several very fine cows of the colour now in vogue; one of whom I remember cost £6, which was more than twice the price of the best cow then in that quarter. As I lived then in that neighbourhood, I had access to know that many calves were reared from these cows, and that their offspring have been greatly multiplied on the strath of the water of Irvine." He further tells us that: "Among other crosses with foreign cows or bulls, I understand that the Earl of Marchmont, about 1750, purchased from the Bishop of Durham and carried to his seat in Berwickshire several cows and a bull, either of the Teeswater or other English breed, of the high brown and white colour now so general in Ayrshire; and that Bruce Campbell, Esq., then factor on his lordship's estates in Ayrshire, carried some of the breed to Sornbeg in Kyle, from whence they spread over different parts of the county. A bull of that stock, after coupling with many cows about Cessnock, was bought by Mr Hamilton of Sundrum, and left a numerous progeny in that quarter of Ayrshire. I am of opinion that this bull, who was much larger than the cows he crossed with, would not produce calves nearly so good as might have been obtained from a bull of inferior weight. He would, however, increase the size and alter the colour of his progeny."[1]

The introduction of these cattle by the Earl of Marchmont is confirmed by Fullarton: "It is asserted by a gentleman of

[1] *Loc. cit.*, pp. 423, 424.

great skill and long experience (Mr Bruce Campbell) that this breed was introduced into Ayrshire by the present Earl of Marchmont, and afterwards reared at the seat of the Earl of Glasgow, whence they are said to have spread all over the country."[1] With regard to the date of its occurrence, however, some discrepancy seems to exist, since Mr Speir quotes a statement by a Mr Robertson, factor in 1811 to the Earl of Eglinton, to the effect that Mr Bruce Campbell died in 1740, ten years earlier than the date which Aiton assigns for the transaction.

It appears, therefore, that during the middle period of the eighteenth century at least three importations into Ayrshire of an improved breed of dairy cattle are recorded, viz.:—

(1) By John Dunlop, of Dunlop, into the district of Cunningham.
(2) By John Orr, of Barrowfield, to Grougar in 1769.
(3) By the Earl of Marchmont about 1740.

It further appears that these cattle were prevailingly brown in colour, that they were much larger than the native cows, and that they had an immediate influence on the dairy cattle of the districts to which they came, as a result of which their progeny spread rapidly through the county of Ayr.

The cattle brought in by the Earl of Marchmont came from the north of England, and are described as either of the Teeswater or other English breed. Those introduced by Mr Dunlop are said to be Dutch or English.

The influence of these cattle on the colour of the dairy herds of Ayrshire generally is described by Aiton: "It was probably from some or other of these mixtures that the red and white colours, now so common, were introduced. I remember that about 1778 and 1780 that breed became fashionable with some of the most opulent and tasty farmers in the parishes of Dunlop and Stewarton; and that, from these quarters of the county they gradually spread over the other parts, first of Cunningham, afterwards of Kyle, and now of Carrick, and other districts, even out of the county. Till these were introduced the cows of Cunningham were generally black, with some white on their face, belly, neck, back, or tail. The native breed of cows in Scotland seem to have been generally black, and except in the approved dairy breed they are still mostly of a dark or black colour. Hence the term black cattle is still applied to cows of every colour all over Scotland. A cow that was mostly black, or any other dark colour, with a white face, was in Ayrshire denominated a bassened cow; one

[1] Quoted by Speir, 'Early History of the Ayrshire Breed of Cattle,' 1909.

with much white on her neck was termed a hawked cow; when a stripe of white ran along the ridge of her neck, she got the name of a rigged cow; and if the lower part of her tail was white, she was said to be tagged. But now the whole dairy breed in the county of Ayr are of mixed brown and white colours."[1]

From Ayrshire the influence of the newly-introduced strain spread into other counties, until it came to determine the character of the Scottish dairy breed. Thus, for example, Ure tells us that "the farmers have of late paid particular attention to the management of milk cows, the offspring of an excellent breed introduced into the parish about 40 years ago, by the late Patrick Graham, of Limekilns, Esq. This worthy gentleman procured the first of the breed from a bull that belonged to the late Colin Rae, of Little Govan, Esq.; but the cows were of the common indigenous kind. The bull was originally of the breed that has long been reared in the parishes of Dunlop and Stewarton, and which is now known by the name of the Ayrshire breed."[2]

These, then, are the facts on which we have to decide to what breed the imported cattle belonged. They were large brown, or brown and white cattle; and their progeny were brown or pied. They were introduced for the purpose of improving the properties of a breed of dairy cattle. They were brought from England at the instance of Scottish landed proprietors. There were in England, and in the districts from which some of them at all events came, numbers of Dutch cattle, which were in high repute as dairy stock, and which were employed for crossing purposes, and presumably with the object of improving the dairying properties of other breeds.

These facts point to the conclusion that the cattle brought into Ayrshire were Dutch or Dutch crosses; and this conclusion is borne out both by local tradition and by the fact that the portraits published by Aiton are in many respects suggestive of Dutch cattle.

The suggestion has been made that the cattle in question may have been of Channel Island origin. This suggestion appears to me to be wholly fanciful. It derives no support from contemporary statements. It is inherently improbable, since it would have been an unlikely and almost certainly an unsuccessful experiment, to subject Channel Island cattle to the conditions under which bovine life was carried on in the middle of the eighteenth century in Scotland. It is a conjecture inconsistent with the statements, that the imported

[1] *Loc. cit.*, p. 425.
[2] 'History of East Kilbride,' 1793.

cattle were much larger than the native breed, and that they were brown in colour. It is, further, inconsistent with the fact that the colour-effect of the cross was to produce a brown-and-white progeny, since the Channel Island cross with Shetland cattle (the existing survivors, as we have seen, of the indigenous cattle of Scotland) is almost invariably of a uniform dark colour, which is also generally characteristic of the Jersey-Ayrshire cross. This assemblage of facts seems to dispose easily of a conjecture which is based on mere rumour and has no support in contemporary records. The one fact which appears to give colour to the theory that the eighteenth-century cross was from the Channel Islands is that certain Ayrshire cattle bear a general resemblance to the Channel Island breeds. Of this fact, however, there are two quite simple explanations. In the first place, it may be admitted that, in the period preceding the institution of the Ayrshire Herd-book in 1877, some Channel Island crosses may have been reckoned as pure Ayrshire cattle, and that their progeny may have been accepted for entry in the Herd-book, since it is quite certain that Ayrshire cattle have frequently been crossed with the Channel Island breeds. In the second place, the Channel Island cattle, no less than the indigenous cattle of Scotland, are of Celtic Shorthorn race, and the resemblance of certain Ayrshires to the Channel Island cattle may arise from a reversion to the indigenous stock.

The one fact which is sometimes thought difficult to reconcile with the Dutch origin of the cattle brought to Ayrshire from England is, that these cattle were certainly brown, while the best-known Dutch cattle are now black-and-white. These black-and-white cattle, however, best known as Friesian or Holstein, are not the only cattle in Holland. Many brown animals are found there; and seventeenth-century Dutch pictures portray more brown than black-and-white cattle. In point of fact, the contemporary records show that the Dutch cattle brought to England in the sixteenth and eighteenth centuries were brown.

One further incident in the development of the modern Ayrshire deserves to be noted. It is fully detailed by Mr Speir; and so far as I am aware, no other published statement regarding it is to be found. I therefore reprint Mr Speir's statement as it stands:—

"The favourite herd at this early period, and the one which exercised probably a greater influence on the breed than any other of this period, was that of Theophilus Paton, of Swinlees, Dalry. That part of the county is principally held by occupying owners, and Mr Paton was one of them. He was born 4th April 1778, and died 18th April 1872, at ninety-four years of age. He had a brother Will, who was a Highland cattle

dealer, who died on 18th October 1858, aged seventy-nine years. The writer quite well remembers Will's funeral, and being a neighbour, he was often in the company of the elder Mr Paton, from whom he received direct many of the following notes regarding this particular herd.

"The Theo. Paton referred to here was in America for a short period when he was a young man, and at the earliest it must have been 1800, and very likely somewhat later, before the herd was acknowledged to be in any way superior to those of his neighbours. Theo. Paton often repeated to me the story that the basis of the herd was a cross between an Ayrshire bull and a West Highland heifer. The introduction of any Highland blood into the Ayrshire has often been disputed, but as far as this particular instance is concerned there is no room left for doubt. That eminent exhibitor and judge of Ayrshire bulls, the late Wm. Bartlemore, of Paisley, whose grandmother was a sister of Mr Paton's, in a letter on this subject to the 'Scottish Farmer' of 11th September 1897, says that this animal was a Skye heifer, and that 'the first progeny was a red heifer calf, but the dam in milk exhibited such pre-eminent qualities of teat and udder, that he again so mated her for years. This undoubtedly formed the nucleus of his noted Ayrshire herd, and through it almost immediately of those of Parker of Nether Broomlands, Irvine; Reid of Auchengown, Lochwinnoch; Love of Threepwood, Beith; and Robertson of Hall, Neilston.' What proof Mr Bartlemore had for stating that the heifer came from Skye, or as he says further on, from Ensay, I have no means of knowing, but I have no remembrance of the old man ever having said where it came from. Further on in the same letter Mr Bartlemore says: 'Swinlees Ayrshires were noted more especially for their size of body, volume of udder, neatness and perpendicularity of a large corky teat, brown colour, with very dark sides of head and neck. There are those alive who point to one particular brown cow at Swinlees whose circumference round the teat would be incredulous, now when we desire to be veracious.' In a communication to the 'Scottish Farmer' of 7th August 1897 on this subject, Mr Hamilton, late of Woolfords, Cobbinshaw, Lanarkshire, says that 'Mr Paton of Swinlees had the best stock in Ayrshire.' He had visited the stock once or twice when he was a young man, in company with the late Lawrence Drew, and his recollection of the stock, as described to me by himself, is very much as stated by Mr Bartlemore, who obtained his information from several persons then alive, who were intimately acquainted with it. During my connection with the family there were no Ayrshires at Swinlees, as Mr Paton was then too old to look after them. Mr Hamilton is now seventy-eight years of age, and writing me

recently on the subject, says 'they were grand commercial cows with well-made bodies, and exceedingly good at the flank and teats.' The appearance of these cows seems to have impressed themselves very vividly on Mr Hamilton's mind, as he is still enthusiastic over them. At the moment Mr Hamilton will probably have judged Ayrshires longer than any one now living, as it is sixty years since he first judged at Lesmahagow.

"Although Mr Hamilton is probably the only person now living who had inspected the Swinlees heard, the late Mrs Hunter, of Machribeg, could go much further back than Mr Hamilton, and go into details in a way which few could have believed other than those who knew her. Six months before she died she informed me that her father was commended at the H.A.S. Show of 1835, at Ayr, for a bull called Jock the Laird. This bull was off the Swinlees breed, and she said 'he was dark brown with black points.' In writing me *re* this, she says, 'The Swinlees herd was the leading prize-taking one at this time,' that was 1835 and following years. Mrs Hunter also mentions that about this time, and for many years after, the late Mr Craig, of Polquheys, came regularly to Dalry and Kilbirnie for young stock, which he sold in the Cumnock district.

"It was about this time that the Ayrshire began to have stronger horns than formerly, and with the points turned upwards instead of inwards; but whether or not these changes were gradually brought about by natural selection, or by the influence of the Swinlees breed, as it was generally called, there is little evidence to show. Owing to its breeding it is almost a certainty that the Swinlees herd would have stronger and more upturned horns than Ayrshires generally had at that date, and as there is ample evidence that bulls from this herd were not only spread all over the country, but were introduced into almost every herd of importance, the probability is that it had some influence on this change. The change was, however, very gradual, for as late as fifty years ago a large proportion of Ayrshires, as I remember them then, had incurved horns. Mr Hamilton says that they were often so much curved inward that the points had to be sawn off to prevent them entering the head.

"The Herd of Parker of Broomlands.

"The senior Theo. Paton repeatedly told me that the herd of Mr Parker of Broomlands, Irvine, took its origin from animals supplied by him, and Mr Hamilton, in his paper in the 'Scottish Farmer' of 1897, says: 'The late Mr Parker, Broomlands, Irvine, had a wonderfully stylish stock. He took all the prizes

in his day for bulls and yeld animals. All Ayrshire cows have more or less of that blood, but they did not improve the vessel.' As is well known, probably no breed of cattle have such a majestic walk or such a stylish appearance as those of the West Highlands, and knowing as we do of the infusion of West Highland blood into the Swinlees herd, and the close connection between the Swinlees herd and that of Mr Parker of Broomlands, it may well be asked to what extent was the Broomlands herd indebted to the West Highland breed for the stylishness referred to by Mr Hamilton."[1]

How far the Highland cross, whose occurrence is here narrated, may have permeated the Ayrshire breed, is a matter of mere conjecture. Certainly there are Ayrshire strains and individuals whose horns are highly suggestive of a West Highland cross. It is probable, however, that the cross was resorted to in only a few instances; and, for all practical purposes, occurring only after the breed had become well established in type, numerous, and widely distributed, it may safely be considered to have been bred out.

It may thus be said that while now, and for many years past, in all respects a pure breed, the Ayrshire is of composite origin. How much it owes to its various elements may be hard to determine. That its value as a milk-yielding animal was originally derived in large measure from the Dutch cross may be regarded as certain. But the surviving pure descendants of the native breed—the Shetland and the almost extinct Irish cows—are also, in proportion to their size, deep milkers; and they have the peculiarity of giving large quantities of milk with a minimum of food and comfort. It is probably from its Kylo origin that the Ayrshire inherits its peculiar and distinctive merit—the hardiness and vigour of constitution which so specially adapt it not only to endure and thrive in the hard circumstances of its native land, but also to be the dairy cow of every soil and climate, equal in milk-yield to any other breed, and immeasurably superior to all others in robust vitality.

[1] Speir, *loc. cit.*, pp. 302-304.

INSECT PESTS IN 1918.

By Dr R. STEWART MACDOUGALL, M.A., D.Sc., F.R.S.E.,
Consulting Entomologist to the Society.

In the 'Transactions' for 1915, I gave, in reply to many communications, some notes on the life-history of the Body Louse, *Pediculus humanus*, or, as it is being now called, *Pediculus humanus*, var. *corporis*. The signing of the Armistice, with the probability of peace, offers the occasion for a few extra notes on this scourge of armies, specially to point out how in spite of a resumption of normal civilian life and habits there lurks the shadow of a possible epidemic of one of the lice-borne diseases.

Fig. 29.—*The Body Louse.*
Magnified. Drawn from a specimen.

The Body Louse (Fig. 29) may lay in the course of its life between 200 and 300 eggs. The adults may live a month, and, in very favourable conditions for them of temperature and food-supply (they live on blood obtained by piercing the skin of the host), more than a month. The eggs are fixed to strands of the material of which the underclothing is made, or to the hairs of the body. These eggs hatch in from a week up to several weeks. The young louse from the egg resembles the parent in external appearance and in food habits, and may attain maturity in between a week and a fortnight.

While no one is necessarily blameworthy because he harbours a louse—one may get a louse as one may get a flea, in public conveyances or public places of assembly—infestation with lice in any considerable numbers is most reprehensible, because such infestation only accompanies unclean habits. Infection with lice may be got from clothing, from bedding, and by contact with infested people.

There is irritation in the puncturings by the lice (although some people are immune, just as one may suffer only the passing pain of the wound when punctured by a cleg, while another may find, say, his hand and arm swell up alarmingly), and a

loss of health attending the body sores caused by the scratching of louse-infected places with unclean nails and fingers. But it is of great importance to remember—and it should be taught—that three virulent diseases can be carried and communicated to men by the louse—viz., Relapsing Fever, Typhus, and Trench Fever. In absence of lice all three diseases would practically cease to exist. Relapsing Fever is a disease chiefly of Eastern Europe and the East, and does not concern us here. Typhus in England and Scotland, owing to measures taken by sanitary authorities, has become rare. One is grateful that on none of our fronts did Typhus become epidemic, when recalling the Typhus epidemic which swept over Serbia, and the outbreak and spread of Relapsing Fever and Typhus which added so to the horrors of the Roumanian retreat in Moldavia.

Trench Fever has, however, for the moment a real importance for us. We have all over the country now many old sufferers from Trench Fever who, though recovered, still carry in their blood the virus of the disease. Should such carriers of the Trench Fever virus be bitten by lice such lice become infected, and can carry the disease to another person who may never have been out of the country. The name Trench Fever should not make us careless. Trenches are not needed for the outbreak and spread of this troublesome and incapacitating fever. In billets and rest-camps far from the fighting line there were outbreaks of Trench Fever, and especially now it should not be forgotten that there is some risk, because the factors for Trench Fever infection may be at hand—viz.: (1) The presence of lice; (2) The infection of these lice by their feeding on a "carrier," *i.e.*, a man who has had Trench Fever, and still retains the poison in his blood; and (3) The passing of such infected lice to another person who has not had the disease.

Applied Entomology and Medical Science have had great triumphs in the War, and not the least of the successes is the experimental proof that Trench Fever is a louse-carried and a louse-spread disease. Brilliant doctors and entomologists, and devoted volunteers, who, for the sake of their fellows and in the cause of science submitted themselves to great discomfort and pain, have amongst them solved the problem of Trench Fever—a problem which for some years had quite baffled medical science. We now know that lice fed on Trench Fever patients take into their bodies the virus or poison that causes the disease. In a little more than a week the infected louse is capable of passing the poison to a hitherto healthy man. The virus or poison of the disease may be at the time of infection in the louse itself, or more commonly in the powdery excrement of the louse, and gains entry to the system of another man through the sores or skin wounds made

by the repeated scratching that accompanies the presence of lice. The fact that the louse excrement is the chief source of supply of the virus of Trench Fever is very important practically, because, in disinfestation, a higher temperature is necessary to destroy the virus of the disease in the excrement than to kill the lice; and clothing which has been freed from infected lice and their eggs may still have in seams and crevices infected powdery lice-excrement. The risk of this last is that if perfectly clean-of-disease lice bite a man who is wearing such clothing, and the man so scratch himself as to break his skin and draw blood, then the excrement with its poison may enter, and down the man may go with Trench Fever.

With so many "carriers" in the country at present, it is clear that there is some risk. There should be no carelessness, and "Cleanliness is next to Godliness" should be the text of many sermons from those interested in health, sanitation, and social wellbeing.

Experiments and practice by such workers as Nuttall, Bacot, Hyam, Lloyd, Peacock, and many others, have shown that—

1. Body-lice and eggs exposed for twenty minutes to a temperature of 130° F. (55° C.) are destroyed.

2. The virus of Trench Fever present in the excrement of the lice is destroyed by moist heat (steam) at 140° F. (60° C.) if kept up for twenty minutes.

3. Lice and egg-infested clothing are disinfested if the clothing be steeped for an hour in a solution of lysol at a temperature of 104° F. (40° C.), *i.e.*, a temperature a little over body heat. The strength of the solution should be at the rate of a table-spoonful of lysol for two and a half pints of water. (One should handle lysol carefully.)

In the 1915 'Transactions' I mentioned that free sulphur had no effect on lice. I repeat this, because people still try to protect themselves against lice by carrying a little sulphur in bags.

The Louse of the Pig and the Wild Boar (*Hæmatopinus suis*, Lorh. *urius*).

This is one of the sucking-lice, close relatives of which infest the horse, ox, sheep, and dog. This louse has a long piercing and sucking proboscis, by means of which the skin is first pierced, and then the blood drawn up. When not in use the mouth parts are withdrawn into the head.

The damage to the infested pig is twofold. First there is the restlessness of the affected animal, which, owing to the louse-punctures, rubs itself against any convenient object that offers, and so irritates the skin. In badly-infested pigs this

rubbing causes bleeding. Secondly, there is loss of blood. In bad infestation these two things interfere with growth. *H. suis* does not pass to, or lay its eggs on, or live on any other domesticated animal. This is due partly to the fact that sucking-lice have mouth parts specially adapted to skins of various thickness, and claws adapted to the thinner or coarser hair of different animals.

The Hog Louse is the largest member of its family (Fig. 30), and is readily visible to the naked eye; the general colour is grey-brown, but the natural colour is sometimes obscured by scales and dust, so that the louse resembles the colour of the host's body. The male measures $\frac{1}{6}$-inch in length, and the female $\frac{1}{5}$-inch. The body is divided into three very distinct regions:—

(1) A long narrow head, with almost parallel sides, with mouth opening at tip, and the five-jointed antennæ at the sides.

(2) The thorax shorter than the head, and distinctly wider; the sides and the base of the thorax are dark. The thorax carries six strong legs. Each foot ends in a curved pointed claw; on the opposite side from the claw the tibia is prolonged into a strong thumb-like process; if a lens be used there can be seen between the "thumb" and the claw a triangular spiny pad; a very good grip is kept of the bristles of the host as the bristle is pulled against the triangular pad by the claw, and held there by the "thumb."

(3) The abdomen, flat, elongate, and consisting of nine segments; segments three to eight have at their sides distinct brown-black chitinous protuberances, and these give the sides a wavy notched appearance.

The two sexes are easily distinguished, the male having the abdomen rounded at the hind-end, while the larger abdomen of the female ends in a triangular or V-shaped notch.

The Egg.—The eggs (Fig. 31), known as "nits," measure in length $\frac{1}{20}$ inch to $\frac{1}{18}$ inch; they are white or yellow-white in colour, and are slightly thinner at the lower fixed end; at the free broader end is a little cap, pushed off when the young louse hatches. The eggs are fixed at the base of the hair by a cement, and the number, one or upwards, on a hair, depends on whether the pig harbours only a few lice or whether it is badly infested.

The eggs are laid chiefly on the sides at the lower part of the body and above the shanks. "The majority[1] of the eggs

[1] The Hog Louse. Bull. No. 20, Agricultural Experiment Station of the University of Tennessee, 1918, by H. R. Watts.

are found on well-defined areas, which form a broad band running chiefly around the lower parts of the body, including the sides of the neck, the lines of meeting hairs between the neck and the jowl, the breast, forelegs and foreflanks, the lines of meeting hairs between the sides and belly, the rear flanks, hocks, and twish. They are also commonly found, in smaller numbers, on the jowl, shields, lower halves of the sides, and the lower halves of the hams: but only in limited numbers on the upper parts of the body, including the face, ears, top of neck, tops of the shoulders, back, loins, hip, and rump. They are rarely, if ever, found in the shanks and tail." These details are given as a guide in the treatment, for the treatment recommended by Watts kills the eggs as well as the lice.

Fig. 30.—Hæmatopinus suis.
From nature. Magnified.

The empty egg-shells may remain for a considerable time attached to the bristles. One sees them sometimes on brushes made from pigs' bristles, just as on one of the fashionable expensive furs of the day it is common, and indeed usual, to find numbers of the empty egg-shells of the louse that affects the animal whose fur is so sought after. Sometimes imitations are passed off as the real thing, and one of the best ways of detecting the imitation fur is the absence from it of the characteristic egg-shells.

Fig. 31.
Bristle of Pig with two Eggs of H. suis, *from which the young lice have hatched.*
From nature. Magnified.

Life-history.—In a fortnight from the time of hatching from the egg, the hog-louse, in favouring conditions, is full grown. Pairing takes place, and the female fixes her eggs to the base of bristles. The eggs hatch in from less than three weeks to over three weeks. The young lice from the egg resemble the parent in appearance and in food habit; but they are, of course, smaller, and not sexually mature; they feed, grow, and moult, and, after several moults, attain the adult state in two weeks and over, according to the conditions.

The length of the life-cycle from egg to adult varies with the environment. Watts, working in Tennessee, found it to be normally twenty-nine to forty days, but varying from twenty-four to sixty-three days. A number of generations in a favouring season are thus possible. The pig-louse cannot live away from the host more than a few days.

Treatment.—In the 'Transactions' for 1913, 1915, and 1917 I have named various dressings that are successful against the sucking-lice of domesticated animals. Watts writes in favour of the use of oil against both eggs and lice of *H. suis.* "Any oil will kill both lice and eggs. Crude oil, also known as crude petroleum, is one of the best materials, and can be applied as easily as any. Kerosene mixed with an equal part of cotton-seed oil, lard, or other available oil, is equally good. Axle-grease or other heavy greases or pasty materials should not be used, because they are too thick to spread well, and hence are not as effective or economical as thin oils. Poisonous substances should be avoided, because of the danger of poisoning the animals. They have no advantage over the common oils, and may not prove as good. Whatever method of application is used, the liquid must reach the skin of the pig."

Midges.

Midges are not mosquitoes, though from questions that reach me they are often thought to be so. They can be distinguished by the short suctorial proboscis (in mosquitoes this is long) and by their longer front legs. Some midges are very annoying, being blood-sucking in habit, but the majority of our British midges are harmless. Many of the midges lay their eggs in lochs and ponds, the larvæ being aquatic. One of these midges (*Chironomus*) frequently lays her eggs in horses' wayside drinking-troughs; the red larvæ or maggots from these eggs are known as blood-worms.

For several years in succession I have been asked what these red "worms" were, and whether or no they were harmful to the beasts that drank the water. In one case reported to me a mysterious disease had affected the horses in the district, and the red larvæ having been discovered in the troughs, received the blame. These larvæ or blood-worms are quite harmless; they feed on organic matter in the water.

The female midge—the parent of the blood-worms—lays her eggs in masses in the water, the eggs being "roped" together by a gelatinous stuff. The larva (Fig. 32) from the egg is a very interesting one. When full grown it measures about an inch, and if examined with a lens will be seen to have a small head followed by twelve joints. On the joint behind the head there is a pair of

feet ending in hooks, and at the hind-end another pair of feet also with hooks. Careful examination with the lens will reveal on the second-last joint of the body two pairs of delicate tubes and also two pairs of smaller tubes on the last joint. Into these projecting tubes of the two last joints the larval heart pumps the blood. There is a gaseous interchange: oxygen in solution in the water passing through the thin walls of the tubes and displacing and replacing the carbonic acid gas—*i.e.*, these tubes are respiratory gills comparable in function to the gills of a fish. This method of breathing in insects, by blood gills, is not very common.

Fig. 32.—*Larvæ of* Chironomus.
From nature.

When the full-fed larva passes into the pupal condition the light pupa floats at the surface; it can also move by the aid of two hairy flaps or paddles at the hind-end. In due course, in warm weather, when the adult midge is ready, the pupal skin splits, and there issues the delicate two-winged midge which flies off to look for a mate. The empty pupal skins can be seen floating on the surface of the water.

The Death's Head Moth (*Acherontia atropos*).

This is the largest and most striking moth in Britain (Fig. 33).

Fig. 33.—Acherontia atropos.
From nature.

The moth has received its name from the markings on the upper side of the thorax, which suggest a human skull. The scientific

name is equally suggestive—Acheron being a river in Hades, and Atropos one of the Fates. The moth has been captured in Britain from north to south, but it is not a common species, although now and again in certain places it is found in fair numbers. One such case was in September, in Perthshire, when the moths, resting on oats, were disturbed by the cutting, and

Fig. 34.—*Caterpillar of* A. atropos.

more than twenty were captured. About ten years ago the Death's Head was also very noticeable in autumn on Tayside.

In the present case the moths were caught near a potato patch. The caterpillars had been noticed in July on potatoes when the land was being hoed for weeds.

The caterpillar rests in the daytime and feeds at night on potato and allied plants (Fig. 34). In colour it is yellow-green,

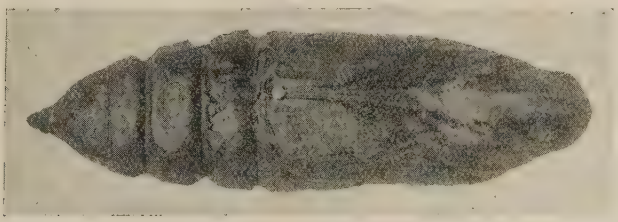

Fig. 35.—*Pupa of* A. atropos.
From nature.

speckled with purple; there are seven oblique violet stripes on each side, meeting on the back; spiracles black; from the back of the second-last joint a rough granular horn projects; the legs are sixteen in number; the length of the caterpillar when extended can be up to five inches. There is a brown variety of the caterpillar, dotted all over with white spots, and having the oblique stripes on the sides brown in colour. The full-

grown caterpillar leaves the food plant and enters the soil for pupation. The pupa is brown or chestnut brown, and has no cocoon round it (Fig. 35).

The Tiger Moth (*Arctia caja*).

This common and attractive-looking moth was sent to me from Banchory in July. Its size and variegated colour had attracted attention, but the species is not a pest.

The moth is somewhat variable in colour; the front wings are velvety-brown, with irregularly arranged cream-coloured markings; the hind-wings are red, with dark spots. There is a red ring round the thorax; the abdomen is red, with black spots all along it. The caterpillars are common; the body is velvety-black, and has, on each joint, tubercles carrying long hairs grey and black and brown; the spiracles are yellow; the legs are black.

The caterpillars are general feeders on dead-nettle, stinging-nettle, and a number of garden and weed plants, and also on Rosaceous and other trees. The moths are found in July when the eggs are laid. The young caterpillars from these eggs hatch in August (in July in a favourable season), and pass the winter, only partly grown, in shelter places, coming out again in spring to renew their feeding and complete their growth. Full-fed in June and July, the caterpillars pupate under cover of a loosely-spun web.

The Earwig (*Forficula auricularia*).

This is a familiar insect, concerning whose food-habits there is some difference of opinion. From records in the literature, there is evidence enough to show that earwigs can be destructive to plants, especially young tender growth and the stamens and petals of flowers. At the same time it cannot be disputed that they very willingly (some hold by preference) take flesh food. They have been observed to kill and eat insects, and on dissection insect remains have been found in their alimentary canal. That they eat their dead fellows is a common observation, and I have seen them pick up and run away with (as a dog would with a bone) tiny caterpillars that had died soon after hatching. Typically the earwig feeds at night and hides in the daytime. There is a very popular belief that they crawl into the ears of people for offensive purposes. This is a quite wrong notion, although the belief is not confined to us, for in France the common name for the earwig is "pierce-ear," and in Sweden and Central Europe "ear-worm." The eggs may be laid in autumn in the soil, and in

the winter both eggs and hibernating females may be found. Long ago it was noticed that the female takes some care of her eggs, covering them with her body; and when the eggs have hatched, the young receive some maternal oversight. The newly-hatched earwigs resemble, in general, the parent; the shape of the forceps or "nippers" differs somewhat: no wings are present, and the reproductive organs are immature. The young forms have the same food-habits as the parent; they feed and grow and pass through several moults, and after the last moult we have the adult males and females, each with a very short pair of wing-covers and a pair of flying wings. Not many people have noticed this earwig flying, although this insect can fly quite well in the full-grown stage. The species here dealt with does not fly so readily as the smaller species of earwig called *Labia minor*.

The wing-covers of the earwig are very short and thin, and somewhat leathery. The flying wings are ear-shaped when expanded; they are delicate, supported by a series of radiating veins. When at rest the wings are shut up like a fan along the line of the veins, and then are twice folded in directions opposite to one another. When the wings are folded away beneath the wing-covers, two hard parts project backwards from under the wing-covers.

The abdomen is long, flat, and exposed, as the short wing-covers hide only the front part of it. The forceps or callipers spring from the last segment, and differ in shape in the two sexes. In the male they are swollen at the base, where they meet, and from this point each arm curves in a half-circle. In the female the two arms of the forceps are almost straight, meeting all the way down when closed, and crossing at the tip. These callipers are defensive in function, but they can also be used in offence, and as an aid in packing the wings.

Earwigs are fond of darkness, and for concealment crawl into crevices of all kinds. In some breeding experiments, in which I had the plants surrounded by muslin sacks, when I came in the mornings to open out the sacks for examination of the contents, dozens of earwigs were always found nestling in the folds of the muslin. Earwigs may also come into houses in numbers and prove decidedly unwelcome, as they also were in camps to men under canvas.

On a garden scale, inverted flower-pots, in which some hay or moss has been placed, form a means of trapping. The traps should be visited in the mornings, and the sheltering earwigs shaken into a dish holding a little paraffin. On a wider scale Jones[1] recommends a poisoned bait of mixed Paris-green and

[1] 'The European Earwig and its Control,' by D. W. Jones. Bull. No. 566 of the United States Department of Agriculture.

stale bread, 1 part of Paris-green to 16 parts of finely-ground-up stale bread. This is wetted and thrown broadcast, where the earwigs are troublesome, with force enough to break the bait up into very small particles. This bait should be laid after dusk. It is not everywhere, however, where this treatment could be adopted, as Paris-green is a dangerous poison.

The Frit Fly (*Oscinis frit*).

This is one of the chief cereal pests of Europe—oats, barley, rye, wheat, maize, and various grasses acting as host-plants. Collin gives the following list of grasses, named in the European literature on Frit Fly, as attacked by frit: Species of Brome Grass, Annual Meadow Grass, Smooth-stalked Meadow Grass, Couch (*Triticum repens*), *Triticum cristatum* (not a British grass), Timothy, Meadow Foxtail, Spreading Millet (*Milium effusum*), Perennial Rye, Meadow Fescue, Yellow Oat Grass, Tall Oat or False Oat, with its variety *Arrhenatherum avenaceum*, var. *bulbosum*. To these I can add from Scotland, Wild Oat or Havers (*Avena fatua*). Petherbridge has also recorded the larvæ on Italian Rye. The fact that so many Grasses can serve as food-plants for the frit larvæ greatly increases the difficulty in fighting this enemy.

The chief damage in Britain is to oats, although I have found the larvæ at work both on barley and wheat. There are two main types of damage—first the damage to the young plants showing in May, and at its height in June and to mid-July, and the damage to the young grain in the ears, from the second brood of the year, in July and August. In September 1904 a case was recorded from Sussex, where actually 80 per cent of the grain was infested; the puparia or pupal cases, some empty, others still containing the fly, were found in the grains, the result being a "very thin kernel or none at all." It had been the opinion in Britain that this attack in the young ears of oat was not common or generally serious, but closer study has proved that there may be very considerable loss in grain from such attack.

The adult fly is very small, measuring less than $\frac{1}{8}$ inch in length and about $\frac{3}{8}$ inch in spread of wings; the body is black.

The larva is a legless maggot, measuring, when full-grown and extended, $\frac{1}{8}$ inch; at its head-end are the two mouth-hooks by which the leaf-sheaf can be penetrated, or a young leaf gnawed across, or a young developing grain pierced: at the hind-end there are two small though distinct projections, by which air is taken. The larva is pale yellow to yellow-brown, and when young and in the very heart of a young oat plant has to be looked for carefully, otherwise it may be passed over.

The puparium or pupa-case consists of the last moulted-off

outer skin of the full-fed larva, under cover of which the fly develops; this pupa-case is brown-yellow in colour, elongate and round, narrowing at the head-end and at the hind-end, where the two end-projections are as well marked as in the larva.

Life-history.—Three generations, at any rate, in a year are possible in Britain. The first flies of the year lay their eggs on the young plants in May, and in this month and in June the stunted growth and the yellow-brown withered central leaves call attention to the attack. The larvæ on hatching make for the apex of the young shoot, which, as a result, is spoiled. Whether such an attacked plant continues to grow depends on the healthiness of the adventitious roots and the success of such tillers (tillers are not roots, but are branches or stems that spring from the axils of leaves near the surface of the soil) as are formed. With a tillering variety of oat that has been sown early I have often found on examination that the primary shoots were quite free from the pest, the tillers being affected. Pupation takes place where the larvæ have been feeding, and the flies of the new brood come away in due course. The purparia can be found at the bases of the sheathing leaves; not an uncommon place to find them is just below the ligules.

This second brood of flies can be at their egg-laying through July and in August, the eggs being laid on cereals, pasture and wild grasses, and in the young ears of oat. I have taken larvæ from ears where the panicles had not broken through the surrounding sheath. It is the larvæ of the second brood which quite spoil the grain in the infected ear, or cause it to be light and shrivelled.

The third brood of flies comes in autumn, and grasses are made use of for the laying of the eggs. The last flies of the season, however, may find winter oats to lay on: I have taken frit larvæ from winter oats once on 12th November and once on 19th December.

While the life-history over the year can be generally described as if there were three broods separately divided from one another by a definite period of time, this is not strictly the case, for overlapping is possible between the generations.

Taking actual dates from my notes on frit fly, for England and Scotland, over a period of years, I find that I have actually taken from oat plants frit larvæ on May 17, 18, 19, 20, 21; on every single day in June except June 10, 18, 19, 22, 23, 25; on July 2, 3, and 8; on November 12 and December 19. I have dissected out puparia from infested oat on every day in June except June 1, 5, 6, 9, 15, 16, 18, 19, 25; on July 1, 2, 3, 5, 6, 8, 13, 15, 20, 31; and on August 1, 2, 3, 4, 5, 20; also on September 6. I have taken the winged flies on June 21 and

28; July 8, 12, 13, 15; August 20; and into September, on to September 24 and September 29, on which dates hundreds of frit flies were coming from oats recently threshed.

In some notes on Frit in the 'Transactions' for 1911, I mentioned that in districts suffering from frit, early sowing had been found to give some protection. Some preliminary experiments to test this were undertaken by the Food Production Department in 1918, and the results given in the 'Journal of the Board of Agriculture' for February 1919 may be quoted, as they bear not only on the question of early sowing, but also illustrate the loss in grain due to the second brood larvæ.

The experiment was done in Hampshire. White "Abundance" and Black "Tartarian" oats were sown, one half of each on March 18 and the other half on April 25.

"On 9th June, when the frit attack on the young plants was very obvious, the infestation on the early-sown plots was found to be fairly heavy, but chiefly confined to the lateral tillers. On the late-sown plots the infestation was very heavy, varying from 80 to 100 per cent of the plants. On an average the number of plants infested by frit fly on the late-sown plots was about five times the number on the early-sown plots, and it was obvious that in the late sown many plants had been killed outright or so damaged that they would not produce ears."

As regards the attack on the grain, the grain was examined after harvest:—

Sowing.	Grains examined.	Per cent Sound.	Per cent Fritted.	Per cent Sterile.
White Abundance.				
First . .	2282	90	5·4	4·6
Second . .	2465	72·4	17·8	9·8
Black Tartarian.				
First . . .	3217	90·5	4·1	5·4
Second . .	2879	72·4	16·7	11·0

The "sterile column" refers to examples where the grain was not developed, and probably in measure this was due also to frit fly.

The Peppered Moth or Pepper-and-Salt Moth (*Amphidasys betularia*).

The caterpillars of this moth are general feeders on a number of broad-leaved trees—*e.g.*, oak, birch, beech, hazel, elm, ash, sycamore, lime, poplar, willow, apple, cherry, hawthorn. In late September specimens came to me from the South on Douglas fir. The attacked Douglas were young plants about six feet high. The caterpillars were eating the leaves (Fig. 36), and some tops of the year's growth had been

Fig. 36.—*Caterpillar of Peppered Moth on Twig of Douglas Fir.*
From nature.

stripped bare. My correspondent mentioned that on account of the caterpillars resembling in colour the stem of the Douglas fir, they were difficult to see and easily passed over. This kind of camouflage or protective coloration is not uncommon among caterpillars, and specially among caterpillars of the Family Geometridæ to which the Peppered Moth belongs. The Peppered Moth caterpillar is stick-like in appearance, and when at rest, extended from a branch, can easily be mistaken for a twig. The only other record I know of this caterpillar feeding on a conifer is quoted in the 'Journal' of the English Arboricultural Society for 1912; the caterpillar in

this case was taken on a young larch. The full-grown caterpillar measures two and a third inches; it varies in ground colour—shades of brown, green, greenish grey—according to its food plant and surroundings. Thus Professor Poulton, taking one-half of a number of eggs, reared the caterpillars from them among green twigs and leaves, and the caterpillars showed green; while the caterpillars from the other portion of eggs reared on leaves growing on brown twigs were nearly all brown, only a few being green like the leaf. The caterpillar has ten legs; its spiracles are edged with red-brown, and rings nine and twelve of the body have each two warty outgrowths.

The moth measures from 1½ inch to over 2 inches in spread of wings; the ground colour of the wings is white or dingy white, peppered all over with black or brown-black; the thorax and abdomen are white, speckled with black; there is a common variety whose abdomen is entirely black. The male has feathered antennæ, the antennæ of the female being simple and threadlike.

The moths are found flying in May and June. Eggs are laid in June. The caterpillars are found from July to September. The full-fed caterpillar leaves the food plant and goes into the soil below for pupation, the winter being passed in the pupal condition. The caterpillars are late feeders—that is, feed in late summer and early autumn—and as the leaves on which they feed have done the most of their work for the year and the tree has made some preparation for winter, the damage done by the caterpillars is not severe.

The Cockchafer (*Melolontha vulgaris*).

This beetle is troublesome both as adult beetle and as larva. The adults feed on the leaves of different broad-leaved trees, and the larvæ feed at and on the roots of plants, grass land and nurseries of young conifers suffering most.

Fig. 37 illustrates the life-history. The adult is easy to recognise; it measures an inch in length, and is bulky in form; the head and front part of the body are black; the wing-covers are red-brown, and have five raised lines down each; the wing-covers do not reach to the end of the body; the hind part of the abdomen ends in a downwardly-curved somewhat pointed prolongation; if the beetle be examined from the side, conspicuous white triangles are seen along each side of the abdomen.

The larva is a six-legged grub, with strong biting jaws; the head and mouth parts are brown, and the rest of the body dirty-white, except the last joint, which is dark in colour and swollen; all the joints of the abdomen, except the last two, have transverse folds on their upper surface, and the last joint

is divided into two by an annular groove. These larvæ have a life of between three and four years. The beetles swarm once every four years—*i.e.*, the complete life-cycle takes four years (in South Europe three years and in the colder parts of Europe five years). The females lay their eggs in the soil. The full-fed larvæ pupate in the soil, and when pupation is over, the

Fig. 37.—*Life-history of Cockchafer, showing adult beetles, one with extended wings; in the soil two larvæ and a pupa.*

From a preparation in my museum. Reduced.

adults, in May and June of the swarm year, make their way to the surface, and settle on neighbouring trees. The beetles rest on the trees during the day, and fly in the evening.

The Willow and Alder Beetle (*Cryptorhynchus lapathi*).

This beetle was recorded in 1913 from Aberdeenshire by Mr James Munro, and every year since specimens of its damage have come to me. This species is capable of causing very considerable destruction to willow, and it is unfortunate

that it proves commoner than was once believed. The adult measures about $\frac{1}{3}$ inch long; it is dull black or black-brown in colour, with white or yellow-white scales on the hind part of the wing-covers, the thighs, and the front part of the thorax. Like weevils in general, there is a distinct proboscis, at the end of which the gnawing mouth parts are found, but when the insect is resting the snout cannot be seen from above (*Cryptorhynchus* means hidden snout) owing to its lying bent under the thorax.

Fig. 38.—*Larvæ, of different ages, of* Cryptorhynchus lapathi.

From nature.

The larva (Fig. 38) is a legless grub, with the body white-yellow, and the head and mouth parts brown.

Damage is done both by the adult and the larva. The adult weevil eats the tips of shoots and gnaws the bark of branches; the grub tunnels below the bark, eating away both bast and cambium, interfering with or checking the passage of the sap; it also enters the wood, and in branches it reaches the pith. The outer bark is undermined,

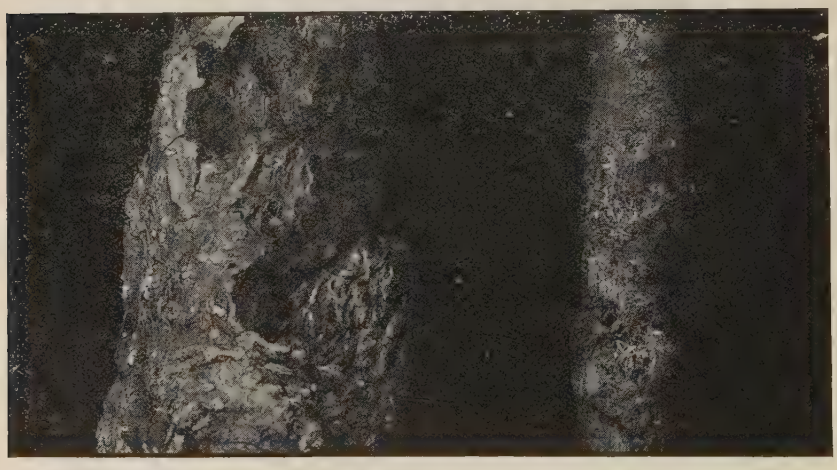

Fig. 39.—*Two branches of Alder showing sunk patches and frass, the result of the work of the grubs of* C. lapathi.

From nature. Natural size.

and characteristic sunken patches (Fig. 39) result. The galleries show a coarse frass of wood chips, and the boredust at the outside, and the change in colour of the bark of infested parts, call attention to the pest.

Two different patterns of damage are shown in Figs. 40 and 41. In Fig. 40 the grub has bored a gallery curved in pattern.

In Fig. 41 more or less vertical borings are seen. In either case the full-fed grub pupates in a bed (Fig. 42) at the end of its burrow, and when the beetle is ready after pupation it eats a hole to the outside (Fig. 43).

Among willows *Salix caprœa, S. viminalis, S. purpurea,* and *S. triandra* are attacked. I have repeatedly, in Central Europe, seen the destructive work of this weevil on alder. *Alnus*

Fig. 40.—*Longitudinal section of stem of Willow showing tunnels of grubs of* C. lapathi.

From nature. Natural size.

glutinosa, A. incana, A. viridis are the three alder species which serve as host plants; the two former are the commoner species that suffer.

The Oak Sapwood Beetle (*Scolytus* or *Eccoptogaster intricatus*, Ratz.).

From different parts of the Forest of Dean examples have reached me of the work of this beetle, shown in Fig. 44. The beetle measures just over $\frac{1}{8}$ inch and is black in colour, the wing-covers being brown-red and not glossy like the front part

of the body; the antennæ and legs are red-brown. There is slight variation in the general colour according as the beetles are fresh from pupation or older. The larvæ are typical Scolytid grubs with brown heads and jaws, and cream-coloured or white legless bodies.

The adult beetles bore into the bark; the mother makes a

Fig. 41.—*Longitudinal section of stem of Willow, showing at different levels the tunnel of the larva of* C. lapathi.

From nature. $\frac{3}{4}$ natural size.

gallery in the region of the cambium, the gallery running in the horizontal direction; the mother gallery measures three-quarters of an inch and over in length. Along the sides of this gallery the female lays her eggs. The grubs that hatch gnaw galleries that run vertically upwards and downwards and show markedly in the outermost sap-wood; the larval galleries are somewhat sinuous and measure up to $3\frac{1}{2}$ inches in length. The

full-grown grub excavates a bed at the end of its tunnel in the outer wood and there pupates. The beetles when ready eat their way through the bark to the outside; the bark through

Fig. 42.—*Stem of Willow showing larval tunnels and pupal beds of* C. lapathi.
From nature. Natural size.

which a new brood has issued shows a number of small exit holes, as if the bark had been pierced by small-shot.

S. intricatus uses, for boring and breeding, the branches of sickly oak or dying branches broken by wind or snow, hang-

ing from the tree or lying on the ground. There are records of attack on healthy oak saplings, and unbarked posts and palings used in fencing are bored by the beetles for brood purposes.

In the case of the specimens sent to me attention to the *Scolytus* attack was drawn by the bark hanging in shreds and by the marks left by feeding woodpeckers.

Oak is the typical food plant of *S. intricatus;* exceptionally beech may be used.

Fig. 43.—*Piece of stem of Willow showing flight or exit holes of* C. lapathi
From nature. ¾ natural size.

The Chermes Section of Aphids.

This Section of insects has a distinct place in Forestry. The life-history is a very complex one, and only recently has intensive study cleared up many of the difficulties. There are still considerable problems to solve. The chief workers have been Cholodkovsky in Russia, Dreyfus and Marchal in France, Blochmann and Börner and Nüsslin in Germany, Gilette and Patch in America, and Burdon in England.

During the past few years Mr H. M. Steven has been researching on Chermesidæ in my laboratory at the University, and the first part of the Research, containing many excellent

Fig. 44.—*Mother and larval galleries of* Scolytus intricatus *on the sapwood of stem of Oak.*

From nature. Natural size.

observations and a review of experimental treatment, has just been published in the 'Proceedings of the Royal Society of Edinburgh,' 1918.

As introductory to some detailed life-histories, the following general statements may prove helpful :—

(1) The Chermes insects are enemies of trees, but confine their attacks to Conifers.

(2) The complete life-cycle of a Chermes species may take two years. In this cycle two trees of different kind are made use of as host, one tree being known as the Primary Host, the other as the Intermediate or Secondary Host.

(3) The Primary Host is always a Spruce (*Picea*) of some kind; the Intermediate Host in Britain is a Larch (*Larix*), Pine (*Pinus*), or Silver Fir (*Abies*).

(4) A gall is present on the Primary Host—the spruce—under cover of which gall the second generation in the life-cycle develops. No gall is produced on any of the Intermediate Hosts.

(5) The life-cycle may not take two years; or it may be short-circuited and completed on one tree.

(6) Where two years are taken to complete the life-cycle and two hosts used, the primary and the secondary, five different generations can be distinguished. These different generations are characterised as follows :—

Gen. 1. The Foundress or Fundatrix Generation. The generation when mature consists entirely of virgin females, and all are wingless. Each insect has a proboscis longer than the body; this proboscis is sent into a spruce bud, and the stabbing and the sucking of the growing foundress, at the time the bud is developing and unfolding, start the gall.

Gen. 2. The Gallicolæ Generation. This is the generation which is developed under cover of the gall (Gallicolæ, *i.e.*, dwellers in the gall), which is due partly to their punctures and feeding. Later in the season the gall opens and the inmates come to the outside, and after a last moult become the winged adults. All are females. These migrate to the intermediate host, where they lay eggs. But the life-cycle may be short-circuited, the winged females not migrating to the intermediate host but remaining on the same or another spruce, to give rise in time to Gen. 1 again.

Gen. 3. The Colonici. This generation of colonists is developed from the eggs laid on the intermediate host by the migrants of Gen. 2. The winter is passed in an immature larval stage, and when development is complete, in the succeeding spring, all the adults are females and all wingless; their whole life is passed on the intermediate host, on which they

lay their eggs. The young from the eggs become adult by the summer—the adults of Gen. 4.

Gen. 4. The Sexuparæ (= preparing for or providing the two sexes). The Sexuparæ adults are all winged females. They fly to the primary host, spruce, on which they lay their eggs. The eggs hatch into young larvæ, which feed, grow, and moult, developing into the adults of Gen. 5, the Sexuales.

Gen. 5. The Sexuales, or sexual males and females. Both males and females are wingless. Pairing takes place, and the fertilised females lay each only one egg. From this fertilised egg hatches the foundress larva, which, when maturity is reached after a series of moults, brings us to the Foundress or Fundatrix of Gen. 1 again.

In such a five-generation life-cycle we have represented wingless virgin females, winged virgin females, wingless males and females.

Chermes galls on spruce are common all over the country from Inverness-shire southwards, and I have either taken or had sent to me Chermes on larch from Sutherland to Wigtown; I have records from North and South Wales, and from Yorkshire, Norfolk, Lincoln, Shropshire, Bedford, Nottingham, Rutland, Sussex, and Devon.

The recent work on this group of insects has not yet appeared in the text-books, and some of the original papers are not easily accessible to the general student. I have had this represented to me by candidates for the Highland and Agricultural Society's Diploma in Forestry, and every year specimens of attack by Chermes are sent from all quarters and inquiries made. I therefore now give here in some detail the round of life and the distinctive characters of some of the commonest and best-known species that are found on Spruce, migrate to Larch, and return to Spruce.

The Chermesidæ group of Aphids is composed of very small forms; the adult males and females measure $\frac{1}{50}$ inch, and the adults of the other generations up to about $\frac{1}{12}$ inch. The characters relied on for distinguishing the various kinds need the compound microscope; the appearance and structure may not only vary in the different generations but in the different stages of each generation. The mouth parts are interesting, being made up of rostral bristles that pierce and suck: sometimes this proboscis is more than twice the length of the body, and when not in use lies folded in an 8-shaped loop on the under surface of the body.

In separating the various stages, species, and races, characters made use of for distinction are found in—

The winged females.

The antennæ of the winged females.

The first stage of the Foundress generation.
The Colonici generation.
The nature of the chitinous plates and wax pores (chitinous plates with glandular pores, which secrete exuding wax that looks like wool, are a feature of the upper surface of some of the stages and species). (Figs. 45, 46, 47, and 48.)

These various points should receive attention in the descriptions which follow.[1]

The whole question of races, species, physiological varieties, remains yet for settlement, but one is reasonably safe in following the suggested separation of the two Genera Chermes (Börner) and Cnaphalodes (Macquart), which can be distinguished thus:—

Genus Chermes.

The small hind wings have a longitudinal vein near the front edge; from this vein a small branch is given off almost at a right angle.

On the upper surface of the hibernating or first-stage larva of the foundress there are transverse rows of plates, each of which carries two to six or more (four is a common number in the middle and two at the hind end) wax pores; each wax pore has a double contour. On still higher magnification the wax pores on a plate are seen to surround a small spine.

The Chermes Gall is a bud-gall. It suggests in appearance a pine-apple or small cone (Fig. 49). The gall consists of the swollen, broadened-out bases of the young needles which meet at their edges; the tips of the needles project above the galled portions or scales. The shade of green varies, but it is darker than that of Cnaphalodes galls; sometimes the fused edges of the lower swollen parts of the needles are reddish in colour. Typically the gall is one-sided—*i.e.*, the shoot is not affected all the way round as the needles are galled on one side of the shoot only. The shoot also as a rule grows beyond the gall, but may die off or become much bent.

Genus Cnaphalodes.

The small hind wings have a longitudinal vein near the front edge; from this vein a small branch is given off at an acute angle, in slanting fashion.

On the upper surface of the hibernating or first-stage larva of the foundress there are transverse rows of plates, those in the abdominal region having each one central wax pore; the wax pores have double contours.

The Cnaphalodes gall (Fig. 50) is a bud-gall, and all the needles of the bud are galled. Its gall is small, stunted, round, and cone-like. It is without very prominent projecting needle-tips—*i.e.*, the needles of the bud broaden out to form the scale-like parts of the gall. The gall ends the shoot, or at most there may be a small tuft of needles beyond it. The colour of the gall is bleached-green or yellowish-white. The grown-together edges of the scales are seldom reddish. It is common to find larvæ on the outside of the Cnaphalodes gall, unenclosed, and either sucking or dead.

[1] A most helpful summary of the characters of the European species of Chermes, as detailed by Cholodkovsky, is given by Mr E. R. Burdon, M.A., F.L.S., in the 'Journal of Economic Biology,' 1908, vol. ii., Part 4.

Fig. 45.—*Chermes on Pine Stem.*
From nature.

Fig. 46.—*Chermes on Pine Stem.*
From nature. Magnified.

Fig. 47.—*Branch of young Silver Fir attacked by Chermes.*
Natural size. (From nature.)

Life-Histories of *Chermes viridis*, Ratz., and *C. abietis*, Kalt.

Steven[1] found these on the following hosts in Scotland: Primary hosts—spruce of different kinds: *Picea excelsa* (Link), *P. alba* (Link), *P. orientalis* (Link and Carr), *P. morinda* (Link), *P. sitkensis* (Trante and Meyer).

Intermediate hosts—larch: *Larix Europœa* (D. C.), *L. leptolepis* (Gordon), *L. occidentalis* (Nutt).

It is a matter of debate as to whether *C. viridis*, Ratz., and *C. abietis*, Kalt., are really two definitely separate

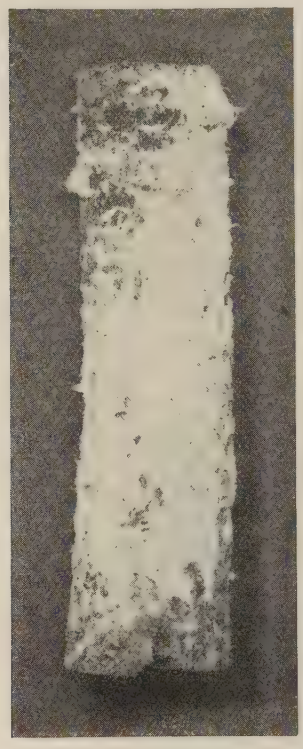

Fig. 48.—*Chermes on Silver Fir.*
From nature. Slightly enlarged.

Fig. 49.—*Gall of Chermes.*
From nature.

species, *C. viridis* having the five generations in its life-cycle and two hosts, and *C. abietis* having only two generations in its life-cycle (both virgin generations) and being a non-migrating species confined to spruce; or whether they are one and the same species, the so-called *C. abietis*, Kalt., being really some of the second generation of the so-called

[1] 'Proceedings of the Royal Society of Edinburgh,' vol. xxxii., Part III. No. 21. "The Biology of the Chermes of Spruce and Larch and their Relation to Forestry," by H. M. Steven, B.Sc.

C. viridis which have not migrated to Larch, but have carried on on Spruce to give rise in due course to a Foundress generation. Both views have their champions. Here, having stated the possibilities, the round of life will be easier to follow if we deal separately with *C. viridis*, Ratz., and *C. abietis*, Kalt.[1]

Fig. 50.—*Galls of* C. strobilobius.
From nature. Natural size.

Chermes viridis of Ratzeburg (Fig. 51).

Generation 1.—A Chermes larva hatched from a fertilised egg anchors itself, in autumn, by sinking its long proboscis

[1] One of the difficulties for the student of this group of insects is the confusion of the names. If these two so-called species are, taken as with the Gallicola generation partly migratory and partly non-migratory, really one species, then the combined name given would be *Chermes abietis*, Linn.

of bristles into the base of a spruce bud, secretes a short frizzly "wool," and thus resting passes the winter. In spring the awakened larva begins to feed, and in a month, or a little longer, having passed through three moults, the adult foundress stage is attained. The actual times of the reawakening and moulting and becoming adult vary somewhat according to the season and country. In Steven's experiments feeding began about the middle of March; the first moult took place in the first week of April, the second moult in the last week of April, and the third moult in the first week of May.

The adult foundress is oval in shape, and green or dark-green

Fig. 51.—*Galls of* Chermes viridis
From nature. Natural size.

in colour; the antennæ are three-jointed. From the wax pores on the upper surface of the body a "wool" is given out, and in spring the position of the minute insect may be indicated by a speck of white "wool." As a result of the feeding of the foundress, the gall begins to form. The adults of the Foundress generation consist exclusively of wingless females, green in colour. These lay all round them little heaps of green or dark-green eggs and then die. The eggs hatch, giving first-stage larvæ of a new generation.

These first-stage larvæ may be found towards the end of May. These larvæ have a short proboscis, and three-jointed antennæ, and secrete no "wool." They become enclosed in the gall, and under cover of the gall moult three times, at

intervals of a fortnight, reaching the so-called nymph condition. In this nymph condition the insects come out of the gall, which has opened owing to its drying. The galls open from the end of July onwards. The nymphs have a reddish tinge, and have green wing-sheaths; after a fourth moult they become adult—the adults of Generation 2.

Generation 2.—The adults of this second generation are all winged females. Their colour is reddish-brown or yellow-brown, and they have five-jointed antennæ; there is a very slight "woolly" excretion from glands on the upper surface of thorax and first joint of abdomen. The wings are four in number, held sloping, like the tiles of a house, when the insect is at rest. These adults of Generation 2 migrate to larch, and lay eggs on the larch needles. The eggs are dark-green in colour: in three weeks, in autumn, they hatch, giving us first-stage larvæ of a new generation. These first-stage larvæ move from the larch needles to the bark of the branch or main stem (the larch needles will soon be falling off). The larvæ fix themselves in crevices in the bark and hibernate. In the next spring—from March 1 onwards in Steven's experiments—they wake up and feed, and after three moults become adult — the adults of Generation 3, known as Colonists or Colonici.

Generation 3. — This Colonist generation resemble their grandmothers, the foundresses, but they are a little smaller, measuring only $\frac{1}{25}$ inch; the wool excreted is shorter, and their proboscis is also shorter. The earliest adult colonists lay their eggs in April, but egg-laying continues through May. The eggs laid are green in colour, and are covered by "wool" secreted by the mother. In Steven's experiments the eggs hatched in three weeks. The eggs differ in destiny. Some yield larvæ whose development is retarded; these remain, without developing, over autumn and winter and till next spring: this type of larva is known as "larva sistens" (sistens = standing still). The rest of the eggs hatch into larvæ each of which is known as a "larva progrediens" (progrediens = going forward), because with these larvæ development proceeds continuously. The "progrediens" larvæ pass from their place of hatching to the larch needles in order to feed; the needles become bent in consequence, and change colour from loss of chlorophyll. After four moults the adult winged stage is attained. These winged forms are the adults of Generation 4, and are known as the Sexuparæ (providers of the sexes) generation.

Generation 4.—The Sexuparæ generation are yellowish-green in colour in the young stages; the adults are darker. The winged adults resemble their grandmothers of Generation 2, only they are smaller, measuring from $\frac{1}{25}$ inch to $\frac{1}{16}$ inch, and

they show little "wool." In June (in warmer places earlier) they fly to the primary host, the spruce, on whose needles they lay about ten eggs, greenish-yellow in colour. From these eggs larvæ hatch in a fortnight, first-stage larvæ of the next generation or Sexuales generation. These larvæ are yellowish or yellow-green in colour, and have three-jointed antennæ. They feed on the needles of the spruce, and after moulting four times are adult males or females.

Generation 5—*The Sexuales Generation, or the Sexual Males and Females.*—Both males and females are wingless. Steven in his experiments got these adults in the last week of July. The adults are very minute insects, $\frac{1}{50}$ inch long. Cholodkovsky gives greenish yellow as the colour of the males, sulphur yellow for the females. Steven found no colour difference, the colour of both being yellow-green. The proboscis is short and the antennæ are four-jointed. Pairing takes place, and the female lays one large egg, yellow or yellow-green in colour, at the base of a bud. From this egg there hatches the larva which overwinters, and with which we began this life-history.

Chermes abietis of Kaltenbach.

The primary host is a spruce; there is no intermediate host. There are two generations only, and these are parthenogenetic ones—*i.e.*, the adult females are virgin females, no males being found in the life-cycle, which is completed in a year. A wingless generation, corresponding to the Foundress generation of the preceding life-history, alternates with a winged generation corresponding to the Gallicola generation of the preceding life-history, but it is non-migrant.

Generation 1—*The Foundress Generation.*—Eggs are laid in the autumn on spruce by adults that were reared in a spruce gall. The eggs are yellow in colour, and hatch in the same autumn, giving first-stage larvæ. These larvæ settle at the base of buds, introduce their mouth parts, and so pass the winter, covered by short frizzly "wool." In March these larvæ begin to feed, and after three moults have attained the adult condition. All the adults are wingless females—the Foundresses. In May these females lay yellow or yellow-green eggs, which hatch into first-stage larvæ. From the feeding of the foundress and the pricking and feeding of these first-stage larvæ a gall results, under cover of which the larvæ develop, undergoing three moults. The insects in the gall reach the nymph stage when wing-sheaths are present. The galls dry and open from the end of July onwards to September, and the nymphs come to the outside, when a fourth moult takes place, resulting in the winged adults of Generation 2, all females.

Generation 2.—These females do not fly to larch, but they lay their eggs on the same spruce on which they were reared, or on another spruce to which they have flown. The eggs are light yellow. The young from these eggs hatch, giving the first-stage larva of the Foundress generation with which we began this life-history.

In spite of the resemblance of the galls of *C. viridis*, Ratz., and *C. abietis*, Kalt., and the resemblance in appearance, save for slight colour differences, of the respective Foundress and Gallicola generations, Cholodkovsky, as a result of his work, holds firmly to the view that the two insects are truly separate species. Börner found an example where winged adults from a gall produced by a foundress reared from an egg of a winged non-migrant did not remain on spruce but flew to larch. Börner, for this and other reasons, champions the view that *C. viridis*, Ratz., and *C. abietis*, Kalt., are not two separate species.

Steven allowed some non-migrant winged forms to remain on the spruce where they had developed, and experimentally transferred more to other spruce, and in both cases egg-laying began within twenty-four hours, bright yellow eggs being laid; whereas when non-migrant winged forms were experimentally transferred to and liberated on larch they climbed to the top of the needles and flew away. When non-migrant winged forms were experimentally transferred to larch, and covered with a protecting sleeve so that they could not fly away, bright yellow eggs were laid, but these shrivelled up without hatching, or if they did hatch the young larvæ died.

The Genus Cnaphalodes.

Steven found the species of this genus in Scotland, on *Picea excelsa, P. orientalis, P. alba, P. sitkensis* as primary hosts, and on *Larix Europæa, L. leptolepis*, and *L. occidentalis* as intermediate hosts.

Cnaphalodes strobilobius, Kalt.

Spruce is the primary host and larch the intermediate host. In the life-cycle there are five generations.

Generation 1—*The Foundress Generation.*—In August from fertilised eggs first-stage larvæ hatch. These larvæ darken to brown or black; they settle actually *on* the buds (not below the buds or at their base), anchor themselves by proboscis, and so pass the winter, under cover of long straight "wool" from the wax pores. In the next spring (about April 1 in Steven's experiments) they wake up and begin feeding. The first moult takes place about the end of April, and these second-stage larvæ give out from their wax pores a short frizzly "wool."

By another fortnight other two moults have taken place, resulting in the adult foundress. The foundresses are all wingless and are red-brown or dark-brown green in colour; they secrete long strands of hanging "wool," under cover of which the eggs are laid; the eggs are dirty-green in colour. Egg-laying is general about the middle of May. The gall (see back for Fig. 50 and also description on page 176) results from the puncturing and feeding, all the needles of the bud being stunted and the growing point of the shoot killed. The eggs, in Steven's experiments, hatched from June 1 onwards yielding first-stage larvæ of Generation 2. These larvæ are light-green to brown in colour. In three weeks three larval moults have taken place, and the galls open in the first half of July, and the nymphs appear. The red-brown nymphs moult and we have the adults of Generation 2.

Generation 2—*Gallicolæ or Migrants.*—These are all winged females; their colour is dark-red; on thorax and abdomen are two lines of "wool." The size of the winged females varies from $\frac{1}{20}$ inch to $\frac{1}{12}$ inch. These winged adults migrate to larch from mid-July onwards, and lay yellowish-red or brown-coloured eggs on the larch needles; the eggs are not covered by "wool"; from these eggs, in three weeks, hatch first-stage larvæ of Generation 3. These first-stage larvæ leave the needles and pass for hibernation to the bark of branch or stem, or they may fix themselves in leaf axils; they do not excrete "wool"; under the microscope the plates with wax pores that are on head and thorax will be seen to be fused into a shield. In March of the new year these larvæ begin to feed; they develop in April into the adult Colonici.

Generation 3—*The Colonists.*—These adults are all wingless females; they are bronze-green in colour, and are almost bare of "wool," only a trace showing at the hind-end of the body. These females lay bronze-green eggs on the dwarf shoots in April and May; these eggs hatch in three weeks. The destiny of the eggs is variable, and there is some complexity in the development. Some of the eggs give rise to "sistens" larvæ, which, stationing themselves on the branches, make no further progress that year, but remain over winter till the next spring. The other eggs yield larvæ "progredientes" (progressive larvæ); these are dark-brown or black in colour, and without "wool"; they pass to the needles, where they may be found feeding in company with larvæ of *C. viridis*, Ratz.; the needles become kneed or bent as a result of the feeding. All the "progrediens" larvæ resemble one another until the third moult is completed, when two forms show—viz., nymphs with rudiments of wings, and fourth-stage larvæ that show no sign of wings.

The latter may be considered first. They moult a fourth

time, yielding in June adults that are wingless females. These adults are dark-brown in colour, and secrete a distinct white "wool" under cover of which they lay greenish-brown eggs, from which, by three weeks, come larvæ, some of which are "sistens" and some "progrediens." As before, the "sistentes" remain undeveloped, while the "progredientes" develop to another wingless adult generation; and the same may be repeated for still another generation. These wingless generations on the larch that remain on the larch are sometimes called the Exile generations.

Now, returning to the nymphs with rudiments of wings, there is one more moult, yielding in June the adults of Generation 4—the Sexuparæ.

Generation 4—*Sexuparæ.*—These adults are all winged females, and they fly to the primary host, spruce. They give out abundant brown-white "wool," under cover of which a small number of eggs is laid; the eggs may vary slightly in colour. In a fortnight these eggs hatch, yielding first-stage larvæ of Generation 5—the Sexuales generation. The larvæ moult four times, and by the end of July adults, males and females, are ready.

Generation 5—*Sexual Males and Females.*—These are wingless; the males are olive-brown, and the females orange-yellow or reddish-yellow. Pairing takes place, and each fertilised female lays a single egg. These eggs hatch in August, giving the first-stage larvæ with which we began this life-history.

Cnaphalodes lapponicus, Chol.

This species confines itself to the primary host, spruce. It has only two generations in its life-cycle—a Foundress generation and a Winged Non-migrant generation. The life-cycle is completed in a year. The adults are all females.

Generation 1—*The Foundress Generation.*—Eggs are laid on spruce by winged adults of the non-migrant Gallicola generation. These eggs hatch in autumn. The first-stage larvæ from the eggs are dark-brown in colour; they have a long proboscis, and place themselves on the buds, where, under cover of coarse "wool," they pass the winter. They wake up and feed in April, and undergo three moults; the adult stage is attained in May. The adults are all wingless females—the foundresses.

Generation 2—*Gallicola—Non-Migrant Generation.*—These foundresses lay brown-green eggs all round them under cover of an abundant "woolly" secretion. These eggs hatch into first-stage larvæ, and as a result of the work of the adult foundress and these first-stage larvæ a gall is formed resembling that of *C. strobilobius.* Inside the gall the larvæ develop, three moults taking place, and then the galls open, exposing the nymphs.

The nymph moults and we have the winged adult. The winged adults are red in colour and are all females. These females do not migrate to larch, but on the same spruce on which they have developed or on another spruce to which they have flown, they lay eggs from which come the first-stage larvæ of a Foundress generation with which we began the life-history.

Damage to Spruce and Larch.

Spruce unfavourably situated or weakened by frost or by the injury of animals may suffer severely from the formation of galls. On account of the galls the normal branching and growth are interfered with. Shoots that would in ordinary circumstances have developed normally are either suppressed, or, remaining weak, perish later on. Galled shoots often show a very marked curvature (Fig. 52), and they break easily.

The *viridis* and *abietis* forms attack quite healthy spruce. As regards the *strobilobius* and *lapponicus* forms shaded branches are attacked, and as has been pointed out earlier, the growing point of the branch is killed; in a badly infested tree this means the destruction of many potential branches, and the ultimate death of the tree.

Larch suffers severely from attack by both Chermes and Cnaphalodes. There is destruction of needles owing to the sucking of the insects, and the bark is also punctured. Young larch stems may be seen quite white with the "woolly" secretion of the insects, and I have records of the dying off of young trees as a result.

Trees reduced in vigour by Chermes and Cnaphalodes attack are exposed to a further danger as the spores or *hyphæ* of parasitic fungi may gain entry to the tree by way of the proboscis punctures. Massee [1] repeatedly in experiment produced larch canker by placing the spores of this fungus underneath the sucking foundresses. Burdon has emphasised this danger from his own observations, and has demonstrated the risk by a series of dissections.

Preventive and Remedial Treatment.

Part of Mr Steven's research was devoted to control measures, and I would emphasise the conclusion that "the fumigation of coniferous nursery stock before despatch to the planting area has proved a practical method of limiting the further distribution of these pests and of ensuring that the plants get a reasonable chance of establishing themselves in their new environment." A series of fumigation experiments were done with hydrocyanic

[1] 'Journal of the Board of Agriculture,' vol. ix., Sept. 1902.

acid gas from potassium cyanide, with hydrocyanic acid gas from sodium cyanide, with nicotine, and with bisulphide of carbon.

The nursery plants infected with Chermes and Cnaphalodes were

Fig. 52.—Chermes viridis *galls on Spruce, with consequent curvature of twigs.*
From nature.

placed in a fumigating chamber and exposed to these various fumigants. The methods of fumigation need elaboration and perfecting, but the results of the above-mentioned experiments were satisfactory. The most useful fumigant proved to be hydrocyanic acid gas. This is a dangerous poison, and, though

easy of application, calls for experience. The time for fumigation would be just previous to the despatch of the young plants to the planting area.

Where Chermes or Cnaphalodes are widespread among young plants in a nursery or on plants in the open a through treatment by spraying measures is very difficult. Burdon[1] had good success against the hibernating Chermes on spruce with this spray: "Dissolve 3 lb. soft-soap in 2 qrts. of boiling water; add 1 pint paraffin to the above whilst still boiling, and churn the two together until they form a buttery mass. This stock is then diluted with 5 gallons of soft water."

[1] "A Remedy for the Spruce Gall and Larch Blight Diseases caused by Chermes," by E. R. Burdon, M.A., F.L.S., in the 'Journal of Economic Biology,' 1907, vol. ii. pt. 2.

FAMOUS CLYDESDALE SIRES.

(Second Series.)

By ARCHIBALD MACNEILAGE, Editor of 'The Scottish Farmer,' and Secretary of the Clydesdale Horse Society.

The first series of notices of Famous Clydesdale Sires will be found in the 'Transactions,' Fifth Series, vol. ix., 1897. The series now to be presented begins where that ends. At the date of writing that article the leading animals of the breed, as indicated by showyard results, were the immediate descendants of "Prince of Wales" 673 and "Darnley" 222. The former great horse died at the close of the season 1888, and his younger contemporary died at the close of the season 1886. The successful show animals of the nineties were to a very large extent the result of crossing females by "Darnley" with "Prince of Wales" or his immediate descendants. But at the date when our last article was written it was impossible to determine what the effect of such blending would eventually be on the breed as a whole. To-day, after fully twenty years, a better estimate may be formed. The typical stallion of the "Prince of Wales-Darnley" combination was

"Prince of Albion" 6178 (1886-1901),

a beautiful bay horse, foaled on 25th April 1886, and bred by R. F. F. Campbell, M.P., of Craigie, Ayr. He was purchased, when rising two years old, from his breeder, whose representative was John Russell, by the late James Kilpatrick, Craigie Mains, Kilmarnock, and in his hands had a successful career in the showyard. "Prince of Albion" was first at the Highland and Agricultural Society's Shows four years in succession—viz., in 1887, 1888, 1889, and 1890. When he was two years old he was sold by Kilpatrick to Sir John Gilmour of Montrave, Bart., and in his possession he remained until he died on 10th January 1901. The price paid for "Prince of Albion" by Sir John Gilmour was £3000, and that remained for many years the record price for a draught stallion of any breed. After selling him, Kilpatrick went to Russell and purchased his own brother, "Prince of Kyle" 7155 (1887-1903), for, it was said, fully one-half the price which he had received for the older colt. "Prince of Kyle" was a horse of quite different type and character from the other. He was awarded the Cawdor Cup in 1893, and in the same year the

Cawdor Cup for females was won by "Queen of the Roses" 12,302, a daughter of "Prince of Albion," which had been sold at the Montrave sale in the spring of 1892 for 1000 guineas, at that time the highest price on record for a draught filly of any kind. The dam of "Prince of Albion" and "Prince of Kyle" was "Mysie" 6024, a daughter of "Darnley" 222, and own sister to "Clan Campbell" 2675—a fine colt, which as a two-year-old was first at the Highland and Agricultural Society's Show on Glasgow Green in 1882. He was then sold to Mr Galloway, Majorca, Victoria, Australia, and exported. "Mysie's" produce were not specially true to one type—indeed, no two full brothers in the equine world could well be less alike than the two Princes under review. A uterine sister, "Princess Ariel," by "St Lawrence" 3220, was more after the type of "Prince of Kyle," being upstanding, gay, and rather wanting in flatness of bone, and the characteristic fringe of the Clydesdale. "Prince of Albion" was particularly true to Clydesdale type. He had first-rate feet, and nice sloping fetlocks and pasterns, while his bone was broad and flat and beautifully fringed. His hocks were clean and sharply defined and very broad. In action he was not faultless behind, being inclined to move rather open at the hocks; but, apart from that, he was almost an ideal Clydesdale. Besides his quartette of victories at the Highland and Agricultural Society's Shows, he was frequently first and champion at other shows, as a two-year-old and three-year-old. Amongst his produce the most distinguished were "Queen of the Roses" 12,302, already referred to, and the handsome stallion, "Montrave Sentinel" 10,094, winner of first at Kilmarnock, Ayr, and the Highland and Agricultural Society's Show, Glasgow, in 1897, when three years old. The opinion generally entertained was that the success of "Prince of Albion" as a sire was not equal to anticipations. He had the appearance of being what is called a "breeding horse," and in this respect differed from "Prince of Kyle." The latter also proved disappointing, but this was less to be wondered at, as his appearance did not warrant high expectations. Perhaps the prominence of "Prince of Albion" led breeders to expect too much, and it has frequently been remarked that a sire which is used in one stud exclusively seldom realises expectations. In 1890, at the Highland and Agricultural Society's Show at Dundee, "Prince of Albion," although first in his class, sustained a sensational defeat for champion honours at the hands of

"Prince Alexander" 8899 (1889—exported Sept. 1905),

which won first in the class of yearling colts on his first appearance in a show-ring. This phenomenal colt was foaled on 10th

May 1889, and was bred by Alexander Black, Craigencrosh, Stranraer. He was purchased by the late William Renwick, Meadowfield, Corstorphine, for £1200, and in 1892, on the first occasion when it was offered for competition, he won the Cawdor Cup at the Glasgow Stallion Show. He was got by "Prince of Wales" 673, out of "Jeanie Black" 8100 by "Darnley" 222. When he was begotten his sire was twenty-two, and his dam was two years old. She was generally regarded as perhaps the best of all the female produce of "Darnley" begotten during his historical three years' service in the Rhins of Galloway (1884-1886 inclusive). She was unbeaten at the local shows in Wigtownshire, but was never shown outside of Galloway. She produced one other foal after "Prince Alexander," and died shortly after it was born.

"Prince Alexander" was a beautifully level, well-balanced horse. During the first three years of his life he may be said to have been invincible, and he was hired on what were then regarded as very high terms to travel in the Girvan and Ballantrae district of Ayrshire. Like "Prince of Albion," he did not himself grow to the size and weight which is desirable in a draught stallion, and as a general rule his produce, while "nice" enough and very just and true to breed character, were also lacking in weight and substance. In spite of these things, however, he stood second on the list of winning sires in 1899. Perhaps the best among his colts, and the horse through which he is likely to be best remembered, was William Park's "Prince of Brunstane" 9977, a horse which greatly resembled his sire, but left produce more weighty and of greater substance than himself. A notable son of "Prince of Brunstane" was

"Marmion" 11,429 (1899-1908).

He was a virile stamp of horse, well-coloured, up to weight and substance, and quite a noted prize-winner. He travelled in Dunblane, Doune, and Callander, and other districts for premiums, leaving stock both numerous and of conspicuous value in the commercial market. In addition he was sire of "Rosadora" (v. 27, p. 214), owned by William Park, Brunstane, Portobello, the breeder of both "Prince of Brunstane" and "Marmion." She won the Cawdor Cup at the Highland and Agricultural Society's Show at Glasgow in 1905, and was exported to Canada almost immediately thereafter.

In 1890, at Dundee, the first-prize two-year-old colt created almost as great a sensation as "Prince Alexander." This was

"Prince of Carruchan" 8151 (1888-*circa* 1912),

another of the Rhins of Galloway produce of "Prince of Wales"

673. He was foaled in 1888, and bred by John MacCaig, Challoch House, Leswalt. His dam was "Duchess of Challoch" 4780, a daughter of "Old Times" 579, whose dam and the dam of "Prince of Wales" 673 were own sisters. His third dam was own sister to the famous "Lord Lyon" 489. "Prince of Carruchan" was owned by Peter Crawford, then in Carruchan, Dumfries, and he had never been in a show-ring until he appeared at Dundee and won his class. He was a colt of a beautiful bay colour, and up to a good size, with the best of feet and legs, and possessed of first-rate action. He was inclined to be "calf-kneed," but his style and gaiety, coupled with a wonderful balance of merit, made him highly popular. He was defeated for champion honours at Dundee, but in 1893, at the Highland and Agricultural Society's Show at Edinburgh, he and "Prince Alexander" met in the same class, and "Prince of Carruchan" was placed first. As a Cawdor Cup winner he had a remarkable career, securing that trophy in 1894 and 1897, and he was in much favour with district societies in spite of the fact that he was a "riglin." His progeny were not numerous, but they were characterised by much weight and substance. Perhaps the best of them was "Moncreiffe Marquis" 9953, which was first at the Highland and Agricultural Society's Show at Inverness in 1901. Another of his sons, named "Royal Bounty" 16,873, travelled in Cumberland, doing excellent service. Amongst his produce was a mare which became dam of the 2300 guineas horse "Phillipine" 18,044. The first winner of the Cawdor Cup for females (in 1892) was "Irene" 12,641, an own sister to "Prince of Carruchan," and one of the most successful prize mares ever shown was closely related to him. This was "Scottish Snowdrop" 11,976, also bred by Mr MacCaig, and both she and "Irene" were owned by the late R. Sinclair Scott, Burnside, Largs, Ayrshire. The dam of "Prince of Carruchan" was the granddam of "Scottish Snowdrop," and the dam of the latter was "Duchess II. of Challoch" 7500, a daughter of "Darnley," while "Prince of Wales" 673 was her sire. "Scottish Snowdrop" was bred in the same way as "Prince Alexander," and, like him, her only fault was a lack of size. Neither she nor "Irene" lived long. Both produced colts, but they did not come to any distinction. It must be admitted that the best of the produce from "Prince of Wales" and "Darnley" mares, in spite of their supreme excellence from the showyard point of view, failed to realise expectations as breeding stock. Their chief defect was lack of size. For the perpetuation of the line of "Prince of Wales" we have to look to descendants of less eminence in the show-ring.

"Prince Robert" 7135 (1887-1902)

is one of these less distinguished horses. He was foaled in 1887, and bred by James Patrick, Queenzieburn, Kilsyth. His dam, known locally as the "Queenzieburn Mare," but registeried as "Nancy of Queenzieburn" 2805, was got by Steel's "Prince Charlie" 628, one of the best horses of his time. In his breeding he was on both sides distantly related to "Prince of Wales" 673, and the Queenzieburn mare had a succession of notable produce by that horse and his son "St Lawrence" 3220. "Prince Robert" was a big horse, rather lacking in depth of rib, but standing on four splendid feet and legs. He was first at the Royal Jubilee Show at Windsor in 1889, and in the open class for aged horses at the Glasgow Stallion Show in 1892, where he was defeated by "Prince Alexander" in the first competition for the Cawdor Cup. He was owned by Peter Crawford, who also owned a full brother, "Prince Leopold" 6177, a great colt, which died when a three-year-old. When shown in the spring of 1892, "Prince Robert" was a thick weighty horse. He had been premium horse in the Rhins of Galloway, and had left a large crop of foals. Some fancied him, and probably as large a number denounced him. It was easy to be in either camp, for "Prince Robert's" best points were very good, and his worst were very bad. Nevertheless in the final reckoning he must be conceded a high place in the ranks of famous Clydesdale sires. He will be chiefly remembered as the sire of

"Hiawatha" 10,067 (1892-1915),

a typical representative of the "Prince of Wales" family, and one of the greatest show horses the breed has ever produced.

He was bred by Wm. Hunter, Garthland Mains, Stranraer, and his dam was a very fine mare, "Old Darling" 7365, winner of numerous prizes at Stranraer Show, and got by a local horse named "Auchleach Tom" 877, which left good stock. His granddam was "Puppet" 2617, by "Lord Lyon" 489, and one of the strong points of the produce of "Hiawatha" was an ideal formation of hind leg, a characteristic of the "Lord Lyon" race. "Hiawatha" was a horse which arrived at maturity very slowly, but when he did mature and thicken down, he proved a most formidable showyard competitor. In fact, it cannot be denied that he was the greatest showyard Clydesdale that ever lived. He won the Cawdor Cup on four occasions, and was champion of the Highland and Agricultural Society Show at Edinburgh in 1899. Not only did he mature slowly as an individual, but

in his first two seasons he was almost, but not altogether, a failure as a sire. He left but two foals in his first season and not many more in the second. He thereafter became one of the most prolific sires on record. It is worthy of note that several of the most successful and prolific sires have a similar history. The conclusion would seem to be that, provided a horse gets foals at all when a three-year-old and four-year-old, there is every reason to expect that he will prove a prolific sire. The produce of "Hiawatha" were characterised by exceptional quality of feet and legs, broad flat clean bones, and sharply-defined clean hocks. They have not been specially distinguished for action. Many champion animals have been got by him. One of the earliest of these was "Labori" 10,791, the first winner of the Brydon Challenge Shield in 1902; and "Montrave Viceroy" was another winner of the same trophy. His most typically Clydesdale son was "Marcellus" 11,110 (he died in April 1911), which won the Cawdor Cup, and the female progeny of that beautiful horse have proved very successful breeding mares. The most typically Clydesdale daughter of "Hiawatha" was "Boquhan Lady Peggie" 33,395, a very attractive mare which won the Cawdor Cup in 1910 and many other honours, but unfortunately died with her first foal. She was a beauty. The most successful breeding horse got by "Hiawatha" has been James Gray's "Apukwa" 14,567, still alive, whose produce, son and daughter, won both Cawdor Cups in 1915. These two animals were "Drumcross Radiant" 18,323 and Mr Brooks' "Lady Betty" 44,746. A younger horse, which at the present time is in great favour with horse-breeding societies, is "Hiawatha Again" 18,765.

"Hiawatha" had a long career. He stood second on the list of winning sires for the first time in 1905, and held that position long. He was foaled in 1892 and died in June 1915, having completed his twenty-third year. He marks the transition from the thick, blocky, old-fashioned type of Clydesdale to the upstanding, gay, and stylish type. His type mature slowly, but they are splendid wearers, and few sires have exerted a more powerful influence on the breed than he. The combination of blood in his pedigree is rather unique. Through his dam's sire, "Auchleach Tom" 877, he carries the blood of an old-time horse, "Young Garibaldi" 972, popularly known as "Brewster's ringle-eyed horse." This, blended with the blood of "Lord Lyon" 489 and the "Prince of Wales'" strain on his sire's side, constitutes almost a new family in the Clydesdale breed. For good or for ill there can be no denying to "Hiawatha" the appellation of an epoch-making sire.

"Royal Favourite" 10,630.

"Royal Favourite" 10,630 was foaled on May 6, 1897, and at date of writing (August 16, 1919) is still alive—in the hands of his breeder, A. Dewar, Arnprior, Port of Menteith, Stirlingshire. Not a show horse in the strict sense of the term, although not without showyard distinction, "Royal Favourite" has for very many years held a prominent place among Clydesdale sires. He is a thick, well-ribbed, sound-limbed horse, and breeds very true to the old Clydesdale type. His sire, "Royal Gartly" 9844 (1892-1897), won the Cawdor Cup in 1895, and again in 1896. He was of "Prince of Wales" descent on both sides, his sire, "Mount Royal" 8065, being a grandson of that great horse through "St Lawrence" 3220, and his dam was by "Prince Lawrence," another grandson of "Prince of Wales" 673. "Royal Gartly" was an ideal Clydesdale in respect of formation of feet and pasterns, and quality of limbs. His bones were flat, broad, and thin. He had a beautiful hind leg and very clean, sharply-defined hocks. He rather lacked masculine character in front, his head and neck being somewhat of a feminine character. He bred very good stock, but unfortunately died early. "Royal Favourite" stood second on the list of winning sires in 1902 and 1903, and third in 1904 and 1905. He has been sire of two notable Cawdor Cup winners, "Scotland Yet" 14,839 and his own sister "Harviestoun Phyllis" 37,631. He has held a position peculiarly his own in the Clydesdale world. His blood constituents make him a valuable outcross for mares of both "Hiawatha" and "Baron's Pride" 9122 descent. Mated with mares of the latter race especially, he has produced some animals of the very highest distinction. His dam was a daughter of the Keir stud-horse "Brooklyn" 6547, which was sold at the Keir dispersion sale many years ago to Sir John Gilmour, Bart., for £700. In spite of his being rather wide in front, "Brooklyn" left much useful stock, and in the Dunblane, Doune, and Callander district he did first-rate service.

"Lord Erskine" 1744 (1879-1894).

In the midst of the overshadowing influence of two main streams of Clydesdale breeding during the past forty years there is a risk of subsidiary but influential lines being overlooked. One of the most important of these is represented by "Lord Erskine" 1744. This virile stallion was foaled on June 12, 1879, and died in 1894. He was bred by Walter S. Park, Hatton, Bishopton, and was purchased in the spring of 1882 by the veteran Peter Crawford, then in Dumgoyack,

Strathblane. In his possession at the Glasgow Stallion Show in February 1882, he won the Glasgow junior premium of £100, the winner of the senior premium on the same day being "St Lawrence" 3220. "Lord Erskine" subsequently won first and the male championship at the Glasgow Summer Show in the same year. He was hired in October 1882 by the Central Aberdeenshire Society, then newly formed, to travel their district in 1883. This was the first engagement ever made in Clydesdale history in advance of the Glasgow Stallion Show for the ensuing travelling season, and when the Aberdeenshire deputation made the contract many shook their heads and questioned the sanity of the proceeding. The reason for the unprecedented action of the northern men was that on the day preceding the judging at the Glasgow Stallion Show in February 1882, they had hired "Lord Erskine," but of course subject to the proviso that the engagement was annulled should the colt be awarded the premium of the Glasgow Society. This contingency having arisen, the Aberdeenshire men had to be content with what remained unhired in the afternoon of the judging day. Resolved to make sure of the horse in 1883, they made the engagement above referred to, and afterwards re-engaged "Lord Erskine" for 1884 and again for 1888. In the interval between these dates he was premium horse in 1885 in Upper Nithsdale, in 1886 in Hamilton, and in 1887 in Central Ayrshire. In 1889 and 1890 he was in the Machars of Wigtownshire. In his first season in Central Aberdeenshire he left a crop of great foals, and at the Glasgow Agricultural Society's Summer Show in 1885 a group of five yearlings got by him, after an exciting contest with a group of five by "Macgregor" 1487 (finally settled by a bench of three judges appointed *ad hoc*), were awarded first prize. The most outstanding animal in that first group was "Cairnbrogie Stamp" 4274, whose dam, "Young Darling" 237, was a uterine sister of "Prince of Wales" 673. At the Knockdon dispersion sale in October 1876 she had been bought by John Marr for 290 guineas. "Cairnbrogie Stamp" as a yearling, two-year-old, and three-year-old had a very successful career in the showyard, but as a sire he proved most disappointing. Another of the first group which bred very well was "Sir Maurice" 4721. The chief defect in "Lord Erskine" 1744 was his colour. His head, rather than his face, was white, and he was somewhat gaudily marked otherwise. As he was an impressive sire, this defect followed in a large proportion of his progeny. His sire was "Boydston Boy" 111, a thick, well-ribbed, old-fashioned stamp, which won prizes at the Highland and Agricultural Society's Show, and bred well. His dam was "Hatton Bella" 626, a notable prize mare of her time, with good balance of parts and plenty

substance, but her forefeet were inclined to be narrow, and her fore-pasterns were rather short and upright. Her sire was the celebrated horse "Time o' Day" 875, which twice won the Glasgow premium, viz., in 1874 and 1875, and was first at the Highland and Agricultural Society's Show at Glasgow in 1875. He was exported to New Zealand. "Hatton Bella" lived long and bred well. In his later years we understand "Lord Erskine" developed some temper. He exerted a potent influence on the breed, especially in Aberdeenshire. The Association under whose auspices he went there followed up their success in 1884 by purchasing the

"M'Camon" 3818 (1882-1897).

"M'Camon" 3818 was a thick, well-ribbed horse. He had good quality of bone, and a great deal of strength. He was bred, and owned to begin with, by John M'Camon, Kirranrae, Stranraer, was first at the local shows as a yearling and two-year-old; and at the Highland and Agricultural Society Centenary Show in 1884, he was first as a two-year-old, and won the Clydesdale Horse Society's champion prize as the best junior stallion—that is, the best in the two younger classes. He was purchased at that show by the Central Aberdeenshire Club for £900. After doing duty in the district of that club for six or eight years, leaving large crops of foals every year, he was sold to an adjoining district club, in the Mar district of Aberdeenshire, for £400. In their district he also did good service for several seasons, so that all who had ever anything to do with "M'Camon" made money by him. His sire was "Blue Ribbon" 1961, a thick horse of his own type, got by "Darnley" 222. "Blue Ribbon" was exported to Australia, and, as far as I know, did good service there. The foundation laid by "Lord Erskine" and "M'Camon" in Aberdeenshire has been steadily improved upon during the past thirty-five years, and at the present time Aberdeenshire may be regarded as one of the leading areas for high-class Clydesdales. It also enjoys a unique reputation for the production of heavy lorry cart horses.

The outstanding horse of the Darnley race during the eighties and early nineties of last century was

"Macgregor" 1487 (1878-1899).

This notable horse was bred by the late Robert Craig of Flashwood, Dalry, Ayrshire, in 1878. He was bought as a yearling by Andrew Montgomery, for £65. His dam was "Flashwood Sally" 60, a daughter of M'Kean's "Prince Charlie" 629, the sire of "Boydston Boy" 111, and got by

him in the same year. "Prince Charlie" was then the premium horse in the Ardrossan and Saltcoats district of Ayrshire. "Macgregor" was in the main very like his sire, but of a bay colour. He inherited from his dam a tendency to shortness in hind pasterns, and his progeny, rather than himself, were inclined to be "sickle-hocked." This defect was much more pronounced in his own brother "Flashwood" 3604, for which, when he was a yearling, Mr Pollock, Greenlaw, Newton Mearns (afterwards owner of "Hiawatha"), paid £900. "Macgregor" was unbeaten as a two-year-old. As a three-year-old in 1881 he was first at the Glasgow Summer Show, but was defeated in the Championship competition by "Jacob Wilson" 2178. In 1882 he was first at the Highland and Agricultural Society's Show on Glasgow Green, and was never afterwards shown. As a two-year-old he was mated with five selected mares, and left five foals, all of which became prize-winners. Afterwards, and for the best part of twenty years, his sons and daughters dominated the showyards. Time and again they won what is called the family prize—that is, the prize for the best group of five yearlings (colts or fillies), at either Glasgow or Kilmarnock. A very large number of his gets were exported. In America one of his sons, named "The MacQueen" 5200 (1885-1911), owned by R. B. Ogilvie, was famed for many years, and lived to a great age. "Macgregor's" produce were wonderfully true to one type, a sound true class of horses, but possibly lacking somewhat in size and weight. As a whole, his female progeny were more in demand than his male, but all were good. He was represented up to this year by the oldest Clydesdale stallion travelling, viz., "Montrave Mac" 9958, which was got by him out of the Cawdor Cup winner "Montrave Maud," whose own dam again was the invincible show mare "Moss Rose" 6203, by "Dunmore Prince Charlie" 634. "Montrave Mac" proved himself to be sire of some of the best breeding mares of the past twenty years; and there was one very notable stallion among his sons—viz., "Auchenflower" 12,007. He died during the past season, having completed his twenty-sixth year.

"Flashwood" 3604 (1883-1894).

In many respects this wonderful horse was regarded as a better animal individually than "Macgregor" 1487. He had a curiously chequered career in the showyard. When shown for the first time as a yearling at Ayr in 1884 he was placed fifth, and he was not specially distinguished in that season. In 1885 he began badly, being beaten at Kilmarnock by "King Lawrence" 4475, but thereafter at all the principal shows,

including the Highland and Agricultural Society at Aberdeen, he was placed first. In 1886 he was unbeaten in his class, and was again first at the Highland and Agricultural Society Show at Dumfries. His most formidable competitor in that season was the black horse "Prince of Albyn," bred by John M'Millan, Bent, Strathaven, and owned by Peter Crawford. "Prince of Albyn" was got by "Prince of Wales" 673, out of "Jewel," one of the mares brought from the Shire country by the late Lawrence Drew, Merryton, Hamilton. He won the Glasgow junior premium at the Spring Stallion Show that year, and at the end of the season was sold to the late Hugh Rae, who exported him to Victoria, Australia, where "Prince of Albyn" made history. It was no small merit in "Flashwood" that he beat such a good horse. "Flashwood" was not exhibited after 1886 for several years, but at the first open show of aged stallions at Glasgow in the spring of 1891, he was placed first in what was regarded as one of the strongest classes of Clydesdale stallions ever seen in the Glasgow Cattle Market, where the spring shows had been held for about fifty years. As a breeding horse "Flashwood" never came within measurable distance of his brother "Macgregor." Although individually a more weighty horse, his male progeny nearly all lacked size and weight. His most conspicuous success as a sire was achieved when he was mated with the Galloway House mare "Maritana" 8406. Four full sisters were the result of this union, and all four made their mark, either in the show-ring or in the breeding paddock, or in both. These were "Lillie Langtry" (exported), "Ellen Terry" 12,583, "Mary Anderson" (exported), and "Minnie Flashwood" 12,948. From "Ellen Terry" is descended "Baronet of Ballindalloch" 17,101, and from "Minnie Flashwood," "Baron's Seal" 17,097. Both have been noted winners, and the latter has an absolutely unbeaten record. "Flashwood" eventually became the property of A. & W. Montgomery, and died in their possession in 1894. The most virile of the sons of "Darnley," and, as events have proved, the most potent as the ancestor of stallions, was

"Top Gallant" 1850 (1877-1886).

"Top Gallant" was bred by James Smellie, Straven House, Carluke, Lanarkshire, in 1877, and was got by "Darnley" out of "Bell," *alias* "Darling" 887—a chestnut mare by "Campsie" 119. He became the property of Mr Riddell, who showed him as an unnamed two-year-old in 1879, when he was placed well forward in good company. He was written about in the local reports of the time as Riddell's "big-hocked" colt—that is, his hocks were rather inclined to be fleshy—but this was a

natural formation, and not any kind of disease. He was the best three-year-old of 1880, winning the Glasgow prize at the Spring Show and the championship at the Summer Show, and first at the Highland and Agricultural Show at Kelso, in the same year. He was up to a splendid size, with a first-class foot and rightly-set fetlocks. Barring his soft hocks he had the best of legs, and had good action and great style. He was every inch a stallion and a draught horse, and those of us who are getting older like to see what we call the "Top Gallant" forefoot. As a rising four-year-old, Mr Riddell sold "Top Gallant" to his laird, the late Sir Michael R. Shaw-Stewart, Bart., for £1400, and in his possession he remained until his comparatively early death in 1886. This great horse had the defect that he was a "riglin," that is, he only showed one testicle, and whether in consequence of that or not, we cannot say, he was not too prolific. He bred exceptionally well when mated with old-fashioned, short-legged Clydesdale mares. His last full season was spent in the Lower District of Wigtownshire, where we believe he left only sixteen foals—but every one of them was fit to take a place in good company in a show-ring. Through his son, "Knight Errant" 4483 (1884-1890), which as a yearling was unbeaten, and another and the most famous of his sons, "Sir Everard" 5353, his blood is strongly represented in the £9500 horse "Baron of Buchlyvie" 11,263. In Wigtownshire, in the year named (1885), he left at least three great stallions, "Lord Lothian" 5998; "Top Knot" 6360; and "Top Royal" 6361. The first-named (1884-1904) was very like his sire, and for nearly twenty years travelled in Cumberland, where his stock came in great demand. He was a very prolific sire and his male progeny made magnificent geldings. Amongst his female progeny was the celebrated dark-brown unbeaten mare "Lady Lothian" 13,319, which won the Cawdor Cup in 1897, 1900, and 1901. Quite a number of other first-class mares were got by him, and altogether "Lord Lothian" ranks high as a profitable Clydesdale sire. Neither "Top Knot" nor "Top Royal" lived very long, but both did good service. One of the finest mares got by "Top Gallant" was Sir John Gilmour's "Lass o' Gowrie," in every respect a "dandy," scarcely ever beaten, with faultless feet and legs and splendid action, but unluckily she died when beginning to breed. Another full brother and sister worthy of mention are "Gallant Poteath" 8638 (1889-1899) and "Montrave Lady" 9685. Their feet and legs were faultless, and they were possessed of true Clydesdale character. Unfortunately, "Gallant Poteath" as he advanced in years developed rather an ugly temper. The greatest of all the sons of "Top Gallant," having regard to permanent influence on the breed, was

"Sir Everard" 5353 (1885-1898).

This epoch-making sire was bred by Mrs Lamont, Killellan, Toward, Argyllshire, on the opposite side of the Firth of Clyde from Ardgowan, where his sire stood at service. The dam of "Sir Everard" was got by "London Prince" 472, a son of the "Merryton Prince of Wales" 673, out of "London Maggie" 84, one of the greatest show mares of her time. "London Prince" was not himself much to look at, but he bred good stock, and the dam of "Sir Everard" was one of the best of them. Clydesdale business was not specially prosperous when "Sir Everard" was rising two years old, and the veterinary surgeon had been summoned to castrate a bunch of colts at Killellan. This special veterinary surgeon, the late Matthew M'Dougall, Old Kilpatrick, was not a bad judge of a Clydesdale, and he recognised that the colt which became "Sir Everard" 5353, was worthy of a better fate than his mistress designed for him. On some pretext or other he secured a respite for the colt, and reported his existence to the late William Taylor, Park Mains, Renfrew. Taylor sent Robert Renwick, now in Buchley, Bishopbriggs, to buy the colt. This he did at £65, and on such easy terms Taylor became owner of a great horse. As a two-year-old he was first at Paisley. As a three-year-old, four-year-old, and five-year-old, he was first at the Glasgow Stallion Show in spring, and was awarded the Glasgow premium. In 1891 he stood second in a great class of aged stallions to "Flashwood" 3604, and he travelled for premiums in Kintyre, Kirkcudbright, Glasgow, and Banffshire. Everywhere he got stock whose influence abides. Very many prize mares are among his progeny, including "Lady Margaret" 13,833, a grand big mare which won the Cawdor Cup in 1904. With her first foal she received a damage to her womb which put an end to her career as a brood mare. His sons were numerous, and among them were winners of the Glasgow premium and champion honours at the great shows. Two, however, stand out from all the rest as breeding horses—viz., "Baron's Pride" 9122 and "Sir Hugo" 10,924, and perhaps a third, "Sir Everest" 10,917 (1898-1912). This last-named travelled in West Cumberland for several years, doing excellent service to the breed.

"Sir Hugo" 10,924 (1898-1915).

Mr Taylor owned this horse, which was bred by the late William Paterson, of Barnego, Denny, and died in October 1915. At the Park Mains dispersion sale in February 1912, the bulk of the animals disposed of were got by "Sir Hugo."

His son, "Sir Rudolph" 16,086, which Taylor had shown for several seasons, made £1680, and fifty-four head made an average of £131, 8s. 2d. The most notable descendant of "Sir Hugo" is his grandson, "Signet" 16,816, a popular horse which was first at the Highland and Agricultural Show at Cupar in 1912, and in 1916 won champion honours at Edinburgh. Another son of "Sir Hugo" was "Sir Dighton" 13,760, which won numerous prizes in Taylor's hands, and at the Park Mains dispersion sale made £840. He only lived for two seasons more, but his own brother, "Sir Malvern" 17,506, is a popular premium horse to-day.

William Taylor Memorial.

Before leaving this part of our subject a word may be inserted regarding the owner of "Sir Everard" and "Sir Hugo." William Taylor was a son of the late Bailie William Taylor, of Glasgow. He learned farming with the late Mr Stoddart and his successor, John Mitchell, on Boreland of Hutton, Lockerbie. He became tenant of Park Mains, Inchinnan, Renfrewshire, in 1877 or early in 1878, and soon made his influence felt as an expert judge of almost all kinds of horses, as well as an accomplished farmer. He was highly popular with all ranks and classes—gentle and simple alike knowing him as "Willie Taylor." In 1911 it became evident that his physical powers were failing, and in 1912 he passed away. So convinced were breeders of Clydesdales of the pre-eminent character of the services which he had rendered to their interests, that they founded the William Taylor Memorial Prize, which is to be competed for annually in perpetuity at the Highland and Agricultural Society's Shows.

"Baron's Pride" 9122 (1890-1912).

"Baron's Pride" was bred by R. & J. Findlay, Springhill, Baillieston, near to Glasgow, in 1890. He was purchased by A. & W. Montgomery, Kirkcudbright, in 1893, or early in 1894. At the Highland and Agricultural Show at Aberdeen, in 1894, he won first prize and championship as best male Clydesdale exhibited. From 1896 or 1897 until 1910 inclusive, he held first place among Clydesdale sires, producing more prize animals and more champion winners than any other horse, and keeping that first place for a longer period than any horse on record up to the present time. The dam of "Baron's Pride" was "Forest Queen" 7233, a good Clydesdale mare but not a show winner. She was got by "Springhill Darnley" 2429, also bred by R. & J.

Findlay, and got by "Darnley" 222. He was a handsome big horse with good feet and legs. He gained second prize as a yearling at the Highland and Agricultural Show, Stirling, in 1881, being beaten by "Prince of Avondale." Thereafter, having received an injury to his back, he could not be shown, but he bred useful stock, especially mares.

"Baron's Pride" was thus on both sides of "Darnley" descent. He was a horse of marvellous quality, with faultless feet and legs, a fine top and beautiful head and neck, and his hind quarters were carried well back. He rather lacked muscular development in his thighs, and was what Clydesdale judges characterise as inclined to be open there. He also was inclined to be rather open in his hind action, but taken all in all he was one of the best-balanced animals the breed ever produced. His limbs remained fresh and clean to the very end, and his feet were of the best. He died on December 20, 1912. For many years he was followed in second place as a breeding horse by "Hiawatha," and beautiful animals were bred by mating the two streams of blood. No fewer than nine of his daughters won the Cawdor Cup, between 1899, when "Lady Victoria" 14,528 took it at the Highland and Agricultural Show at Edinburgh, and 1912, when it was won by "Harviestoun Baroness" 27,086, which Mr Fairbairn purchased and took to New Jersey. The other seven were "Royal Ruby" 21,619, in 1902; "Cedric Princess" 15,274, in 1903; "Pyrene" 19,757, in 1906; "Chester Princess" 16,371, in 1907; "Nerissa" (v. 29, p. 27), in 1908; "Moira" 33,747, in 1909; and "Cicily" 29,843, in 1911. Not only were these great mares in themselves, but most of them have become successful brood mares. "Lady Victoria" was dam of the Brydon Shield winner "Montrave Viceroy" 14,278. "Chester Princess" became dam of "Scotland Yet" and "Harviestoun Phyllis," both Cawdor Cup winners; "Moira" has been dam of the Cawdor Cup and Brydon Shield winner "Kismet" 18,417; "Royal Ruby," "Cedric Princess," and "Pyrene" have all bred high-class stock. "Nerissa" was exported to British Columbia at the highest price ever paid for a Clydesdale mare for export to any country.[1] "Cicily's" own brother, "Scottish Crest" 13,182, was champion stallion at the Highland and Agricultural Society's Show at Peebles in 1906. "Harviestoun Baroness" is own sister to "Anice" 26,883, a noted prize mare now in the stud of Messrs Dickens & Butler at Silverdale, near to Carnforth. The produce of "Baron's Pride" are noted for their soundness. The oldest horses on the Register

[1] Since the above was written this record has been broken. Both "Rosalind" 45,029, and "Craigie Sylvia" 46,906, have been sold and exported to the United States of America at about £3000 each.

of the Board of Agriculture for the current year are two of his sons, "Baron Mitchell" 10,688 and "Pride of Blacon" 10,837, both foaled in 1898. In respect of showyard distinction and success as a sire combined, perhaps the best of the sons of "Baron's Pride" was

"Everlasting" 11,331 (1900-1917).

This splendid specimen of a draught horse was bred by William Wood, of Purston Hall, Pontefract, Yorkshire. He was foaled on 3rd March 1900 and died in August 1917. His dam was "Rose of Purston Hall" 13,328—a Wigtownshire-bred mare—got by "Prince of Galloway" 8919, a son of the Merryton "Prince of Wales" 673, and her dam was a daughter of "Gregor Macgregor" 5842, which carries his pedigree in his name. Old Galloway Clydesdale breeding is in the crosses behind these, and the substance and weight of "Everlasting" were doubtless due to these sources. When first seen in public at Ayr Show as a yearling he created something of a sensation —his wealth and substance combined with quality of feet and limbs being something out of the common. He had an almost, if not quite, unique record of victory at the Highland and Agricultural Society's Shows. He was first and champion male at Inverness in 1901, at Aberdeen in 1902, and at Dumfries in 1903. He was never afterwards shown, but as a premium horse in Aberdeenshire and in Galloway he had an unbroken record of popularity. He was usually hired for seasons ahead—and while taking a good position in the list of winning sires, his produce were both numerous and in great demand in the markets. They were known universally as weighty, sound, good-tempered, and easily-broken animals. In respect of weight and substance, extraordinary muscular development in forearms and thighs, and the general impression of strength, power, and activity, "Everlasting" holds a place peculiarly his own in the memory of the writer.

"Baron of Buchlyvie" 11,263 (1900-1914).

This celebrated horse was bred by William M'Keich, Woodend, Buchlyvie, Stirlingshire. His dam was "Young Maybloom" 12,003, by "Knight Errant" 4483, already referred to. His second dam was "Maybloom" 4157, by "What Care I" 912, a son of the Merryton "Prince of Wales" 673, and for a number of years stud horse at Seaham Harbour. His third dam was "Bloom" 571, one of the earlier members of that famous stud. She was got by a local horse named "Blooming Heather" 1071. His fourth dam was a mare named "Wardell,"

which had a history. Some time after the late Mr Robert Brydon went to manage the farms and stud of the Marquis of Londonderry at The Dene, Seaham Harbour, he learned of a displenishing sale which was to take place some distance away. The outgoing tenant was a gentleman named Wardell, who had a county reputation for keeping high-class horses. Mr Brydon was himself unable to attend the sale, and commissioned one in whom he had confidence to attend and purchase a particular mare. The commission was duly executed, and on entering the Seaham Harbour stud the mare was named "Wardell." Her pedigree was not specially sought for, but she was reputed to have been got "by a horse named 'Prodigy,' whose sire was 'Sampson.'" She was put to the breeding paddock and produced useful stock. This is the story as told to the writer by the late Mr Brydon. As a young horse "Baron of Buchlyvie" won at the local shows in Strathendrick and the Stirling and Glasgow district. He also was first at the Highland and Agricultural Society's Show at Aberdeen in 1908. He was, when young, a colt of marvellous quality, in fact what might be termed "a swell." He began to make his name as a sire in 1905, when yearlings by him and his half-brother "Everlasting" 11,331 were doing well in the show-ring. Both young horses thus secured good positions on the list of winning sires for that year. In 1911, for the first time, "Baron of Buchlyvie" took first place on the list of winning sires, beating his own sire, "Baron's Pride," which had held the premier place for many years against all comers. In 1912, 1913, and 1914, "Baron of Buchlyvie" continued to hold first place, being followed immediately by "Apukwa" 14,567, thus repeating the record of their respective sires over a much longer period. The produce of "Baron of Buchlyvie" were numerous, and when good were very good; and had his career not been cut short in June 1914, it is hard to say how long he might have continued to hold first place. During that month he was kicked by a mare which he was about to serve or had served. His leg was broken and he had to be destroyed. The famous lawsuit of which he was the subject, ended in his being put up to public auction. He was sold in Ayr Market, on 14th December 1911, by James Craig, of James Craig, Limited, for £9500, and became the sole property of William Dunlop, Dunure Mains, Ayr, at that figure. This is the highest price ever paid for a draught stallion of any breed. Perhaps the mare which bred most successfully to "Baron of Buchlyvie" was William Dunlop's "Dunure Ideal" 21,283, by "Auchenflower" 12,007. This beautiful mare well deserved her name. She was unbeaten as a yeld mare in 1913. She was mated always with "Baron of Buchlyvie," and her first foal was "Dunure

Footprint" 15,203, winner of both the Cawdor Cup and the Brydon Shield. A full sister, "Dunure Chosen" 37,306, is unbeaten, having won the Cawdor Cup in 1914 as well as other championships. The dam of "Dunure Ideal" was "Royal Darling" 14,201, by "Royal Champion" 8956—an excellent breeding horse got by "Lord Lothian" 5998. In 1914 "Dunure Footprint" stood second to his sire on the list of winning sires, and since then in so far as there have been shows at which to test horses, he has been first among living sires. He is serving mares at terms never before known in the history of draught-horse breeding, and is proving both a prolific and a profitable sire.

His most formidable competitor is his half-brother, "Bonnie Buchlyvie" 14,032, which won the Cawdor Cup in 1909 and the Brydon Challenge Shield in 1916. He was sold by public auction when a yearling at Perth for £300, and at the Seaham Harbour dispersion sale in October 1915 he was again sold by public auction for £5250, his buyer being James Kilpatrick, Craigie Mains, Kilmarnock. This is the highest price ever paid for a draught stallion of any breed except that paid for his sire, "Baron of Buchlyvie." "Bonnie Buchlyvie's" dam was "Queen of Beauty" 14,850, a true Clydesdale mare got by "Macgregor" 1487, and her dam was the handsome big mare "Lady Louisa" 12,036, a noted prize-winning daughter of "Prince of Wales" 673. Another excellent breeding son of "Baron's Pride," which has stood the test better than most, is

"Revelanta" 11,876.

"Revelanta" 11,876 was winner of the Cawdor Cup at the Highland and Agricultural Show, Perth, in 1904. This beautifully balanced horse was bred by J. M. Hannah, Girvan Mains, Girvan, Ayrshire, in 1901. His dam was "Marchioness of Girvan" 11,806, a very true Clydesdale sort, got by the £3000 "Prince of Albion" 6178. There are bigger horses than "Revelanta," but very few better. He stood third on the list of winning sires in 1908, and has always been among the best six or ten breeding horses, and is still going strong. He wears very well, and his produce are both numerous and of level quality. His owner is George Alston, Loudonhill, Darvel. It is noteworthy that these three leading Clydesdale sires have their homes in Ayrshire.

Conclusion.

During the past five years comparatively few shows have been held, and therefore the usual statistics for determining the

relative positions of sires are of necessity incomplete. Dealing with such data as are available, it is evident that, just as twenty-two years ago Clydesdale breeding was dominated by the "Prince of Wales-Darnley" combination, so now another combination—to some extent of a dual character—is in the ascendant. About the close of the eighties of last century there was a risk of the breed suffering in respect of size and weight. The menace was neutralised, and in large measure any danger averted, by the advent of "Sir Everard" 5353. In him we had an indirect "Darnley-Prince of Wales" blending, and it has become increasingly evident that that is the blood combination which conserves both quality and size and weight. The dominant living sires at the present time are the two sons of "Baron of Buchlyvie"—"Dunure Footprint" and "Bonnie Buchlyvie"—with "Apukwa," "Auchenflower," and "Royal Favourite." "Dunure Footprint's" name first appeared in the list of winning sires in 1913, when he was third, his sire being first and "Apukwa" second. "Apukwa's" name first appeared in that list in 1911, when he was eighth; in 1912 and 1913 he was second to "Baron of Buchlyvie"; and in 1914 that great horse was first, "Dunure Footprint" second, and "Apukwa" third. "Bonnie Buchlyvie's" name first appeared in 1912, when he was sixth. In 1914 he was fourth, followed in order by the veterans "Hiawatha" and "Baron's Pride." In 1915 "Dunure Footprint" stepped into first place, and has kept it steadfastly ever since. In 1915 and 1916 the next in order were "Baron of Buchlyvie," "Apukwa," and "Bonnie Buchlyvie. In 1917 and 1918 the dominant sires were those already named, with "Revelanta," "Dunure Stephen" 11,876, "Prince Ossian" 16,004, and "Signet" 16,816 in the running. This year, in addition to the three older horses, "Dunure Footprint," "Apukwa," and "Bonnie Buchlyvie," the two younger horses, "Kismet" 18,417, and "Botha" 19,026, have made notable records. Twenty years after this, or thereby, it may be that another pen will be engaged in the duty which mine has twice essayed. The past twenty-two years have witnessed a great advance in respect of quality and uniformity of type, particularly in height and in breadth, and quality of bone—in short, in the wearing properties of the Clydesdale as a draught horse. It is doubtful whether there has been a corresponding advance in weight. It is needful that the lessons of this analysis should be laid to heart.

RESTORATION OF LAND TO PASTURE.

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SINCE the outbreak of war a very large area of grass-land, both temporary and permanent, has been broken up in this country and put under cereals. Although it is certainly in the national interests that as large an area as possible of this land should now be kept under the plough, there are, undoubtedly, considerable areas, particularly of poor land in the later upland districts, where cereal growing cannot profitably be carried out unless the land is laid down under grass for considerable periods.

The average yield of oats per acre over the whole of the country is, at the present time, according to the Board of Agriculture returns, slightly under 5 quarters, and as the better classes of soil generally yield anything from 7 quarters upwards, it must be quite evident that on many soils the yield cannot be more than 3 to 4 quarters per acre; and when the prices of oats fall, as they certainly will do, considerably below the present high level, without any probable proportionate reduction in the cost of labour, it is difficult to see how oat-growing under such circumstances can be carried out profitably on such soils.

In such districts stock-rearing must always be the principal work of the farmer, and the land, therefore, should be longer under grass and only broken up after considerable intervals. The lengthening of the rotation on the kinds of soil referred to, by leaving the land for a longer period under grass, would not necessarily mean a reduction, but would probably lead to an increase, in the total yield of grain from the holding. Two or three years extra under grass would mean that when broken up two or three good grain crops would be got, and the total yield would be greater than with the shorter rotation. Grass is the regenerative crop on all soils, and is particularly beneficial on the very light and on the stiffer classes of clay soils. In both cases what is needed is the growth of deep-rooted plants for the purpose of enriching the whole body of the soil with humus matter, without which the yields of grain will always be unsatisfactory. Where the land is under grass for only two or three years the benefits are largely confined to the surface. White clover, which also does so much to enrich the soil in

nitrogenous matter, and therefore prepare it for cereal-growing, is seldom present in much of the poorer grass-land to any great extent until after the third season. By leaving land under grass, therefore, for five or six years, it is enormously improved, both mechanically and chemically, and is, therefore, in a condition which will permit of closer grain-cropping when broken up, and will certainly give a more satisfactory yield per acre.

To take a concrete example. A holding of 180 acres is at present worked on a six-course rotation with three years under grass. Here we will have two courses under oats, a total of 60 acres, with a probable yield of 4 quarters per acre, or a total for the holding of 240 quarters. If the rotation were now lengthened to a ten-course one, including six years under grass, two good crops of oats could be taken after the lea was broken up in addition to the crop after the turnips. The area under oats would now be reduced to 54 acres, but we are confident that, especially if the wild white clover has developed well, there would be a yield of at least 5 quarters per acre, or a total of 270 quarters for the holding, in addition to which the permanent fertility of the soil would be considerably raised. The area under turnips would be reduced, but with a ten-course rotation the crop would almost certainly be free from disease, and the total weight of crop from the smaller area would, in all probability, be heavier than from the larger area under the closer-cropping system, and, what is of importance at the present time, the labour bill would be considerably reduced. Extending the rotation, therefore, within limits, on certain classes of soil, would mean a larger return in grain, and certainly an improved condition of soil, as well as a reduction in the labour bill.

On many farms, however, either on account of the nature of the soil or climate, or for other reasons, a certain area will require to be put under permanent pasture, and it is the laying out of this that we are to deal with here. Certain points that we deal with will, at the same time, be applicable to the laying down of pastures for shorter periods. We wish to make it perfectly clear that the object of this article is not to advocate that land should be laid down to grass, but merely to offer suggestions as to how this should be carried out, wherever and whenever circumstances make it necessary or expedient to do so.

It is unquestionable that in the past large areas of permanent pasture were very unsatisfactory, owing, no doubt, to the fact that when laid down sufficient attention was not given to the selection of seeds as regards their quality and their suitability for the soil and climatic conditions. It seems to have been held in those days that land to be laid down to pasture did not

require any special treatment, and it has certainly not been an unmixed evil in many cases that farmers have been compelled to break up much of their grass-land, as they have now the opportunity of laying it down again in the light of valuable knowledge that has accumulated during the last quarter of a century. It would, undoubtedly, be both in the national and private interest if much of the inferior pastures were broken up and resown.

Draining.

The first and most essential condition for land that is to be restored to pasture is that it should be well drained. While the majority of farmers will readily admit that for all other farm crops thorough drainage is beneficial, many still hold that for grass-land it is not so necessary. In fact, some hold that lack of drainage is rather an advantage. This idea has probably arisen from the fact that when grass-land is drained, there is, for a time at least, a considerable diminution in the quantity of the herbage; but this is due to the suppression of weeds and coarse grasses of low nutritive quality which are specially characteristic of wet soils.

Drainage, by thoroughly aerating the lower layers of the soil, stimulates the growth of the deeper-rooted plants, and after a time the effect of drainage is that the pasture is quite as plentiful and of a better feeding quality. Pasture, too, on well-drained soils will not only be of better quality during wet seasons, but on account of the deeper-rooted habits of growth of the plants will suffer less during drought. Drained land, too, is always warmer and in every way healthier for all classes of stock. Also, where land is well drained, stock may be kept upon the pasture during wet weather without doing the plants or the soil much harm, whereas on undrained soils during wet weather the pasture may be very badly damaged by the tramping of the stock. Unless, too, the soil is well drained, it is useless to expect any good result from the application of lime or other manure, or indeed from any form of treatment.

The land requiring draining should therefore be well drained some time before sowing out in grass, so that the drains may have begun to draw well before the seeds are sown. The young grasses and clovers will then from the outset be free from the competition of all coarse-growing plants that are encouraged by too damp conditions.

Liming.

It is equally essential that the land should be well limed. It is a well-recognised fact that the sweetest and most nutritive

pastures are those on limestone formations, and that the pastures on soils that are well limed are characterised by a freshness and greenness, especially in the early part of the year, that is entirely absent from pastures on soils deficient in lime. As the tendency is for lime to sink gradually from the surface soil, large quantities of lime are annually lost from all soils through drainage. Land that has been under grass for a long period will likely be very deficient in lime, and there will be all the greater necessity for applying a heavy dressing of lime to soils that have recently been broken up from permanent pasture before they are sown out again.

In order that the lime may be thoroughly mixed or incorporated with the whole body of the soil, it should be applied at least two years before the grass and clover seeds are sown — that is, in preparation for the previous cleaning crop. Thus incorporated with the soil it will benefit the deeper-rooted plants as well as the shallow-rooted; whereas, if applied afterwards on the surface, the shallow-rooted plants only will be benefited. Lime, too, applied to the stiffer clays will assist greatly in getting the soil into that fine friable condition of tilth so essential for the germination of small seeds like those of grasses and clovers.

In one particular direction an application of lime is of very great importance, and this point we wish to emphasise. Many pastures contain a large proportion of bent-grass (*Agrostis vulgaris*). Now this grass is characteristic of soils that are deficient in lime, and a good dressing of lime will go a long way towards keeping the pasture free from this useless grass —not only directly, but also indirectly, by encouraging the growth of the better grasses and clovers.

The organisms which enable the clovers to make use of atmospheric nitrogen are also particularly sensitive to an acid condition of soil, and the clovers, therefore, will be specially benefited by this application of lime.

As there is annually a large loss of lime from all soils through drainage, as has already been stated, the amount to be applied to land that is to be in pasture for an extended period should be considerably larger than that which should be applied to the same class of soil kept under the plough, because in the latter case the sinking lime is constantly being brought again to the surface by the ordinary processes of tillage. Further, on arable land continual dressings can be applied from time to time and worked into the soil. We do not mean, of course, to suggest that pasture should not afterwards be limed on the surface; only it is very important that at the outset a good dressing should be applied and worked thoroughly into the lower layers of the soil.

Cleaning.

Land to be laid down to pasture should first be thoroughly cleaned. During the first year or two, while the plants are in a more or less delicate condition, there will be sufficient competition against weeds from seeds carried to the pasture by wind and other agencies, and it is therefore very important that as little competition as possible should arise from weeds already in the soil. A considerable number of the grasses suitable for permanent pasture are rather slow in developing, and are therefore less fitted to stand the competition of weeds than those used for the shorter period pastures, and thus the cleaning of the land for permanent pasture must be carried out far more thoroughly than where the land is to be laid down under temporary pasture. Where the land is very weedy naturally it will more than pay the time and trouble expended to take two cleaning crops—say turnips followed by potatoes. If the situation and other circumstances will not permit of this, special attention should be paid to cleaning the land for the turnip crop. Further, this crop should also be lifted early and the opportunity taken of again cleaning the land before the grass and clover seeds are sown. The extra cultivation required for this will all be to the benefit of the grasses, which, as already pointed out, require a very fine surface tilth.

Organic Matter.

Another absolutely essential condition in land to be laid down for pasture is that it should be rich in humus matter. Too often it is thought that land not fit to grow crops is good enough to grow grass; but this certainly is not the case. Before land can be expected to produce good pasture it should be brought into a good condition, and condition in the soil is to a large extent a matter of a good supply of humus. Where it is deficient the best pasture plants will make but little headway.

On light soils the humus is specially valuable for its effect on the water-retaining powers, while on clay soil its chief value lies on the influence that it exerts on the mechanical condition, tending to render such soils opener in texture and thus permitting aeration and natural drainage, and thereby stimulating nitrification and other processes in the soil which are so necessary to the health and vigorous growth of all cultivated plants.

Land that has been in permanent pasture for an extended

period may have sufficient left even after growing two or three grain crops; but in the majority of the lighter classes of soil, and again on very stiff clay soils, it will generally be deficient, and means ought to be taken to enrich the soil in this constituent to as great a degree as possible before the grass and clover seeds are sown. The cleaning crop, or crops, should therefore be heavily dunged, and the dung should be applied on the surface and ploughed in. When this is done, the dung, by the subsequent cultivations, gets thoroughly mixed with the soil. Where the dung is applied in drills the mixing is not so thorough, and, particularly on light soils in dry seasons, the drills can be clearly traced in the pasture during the first year or two.

In many cases, however, dung may not be available at all, or only in small quantity. Where this is the case it will be necessary, in order to secure good results—particularly on the lighter classes of soils—to enrich the soil in humus by some other means. This, we think, could be done in the majority of cases comparatively cheaply by sowing after the turnip crop a mixture of perennial ryegrass and broad-leaved red clover. This crop can be mowed lightly or grazed off comparatively early in the season, and the aftermath allowed to grow up a little and then be ploughed in. If care is taken to have the surface well turned in and covered, there should be no difficulty in securing a sufficiently fine tilth for the pasture mixture in the following spring. In order too that the turf may be well decayed and the soil thoroughly consolidated, the ploughing should be carried out early in the autumn. A dense crop of perennial ryegrass and red clover would not only help to enrich the soil in the necessary humus, but would leave the soil in a cleaner condition, the dense foliage of the clover being very effective in checking the growth or entirely shading out any weeds.

Manures.

As regards artificial manuring a great deal is heard nowadays about the improvement of permanent pastures by the application of manures, principally phosphates and potash, on the surface. As excellent results often follow this method of treatment, many apply little or none of these manures when actually sowing the seeds, and trust entirely to after-surface application. This, however, is a mistake. While nitrogenous manures, like nitrate of soda and sulphate of ammonia, are readily diffusible, and, although applied as a top-dressing, will readily reach and benefit the deeper-rooted grasses, the same is not true of phosphatic and potassic manures. Phosphates and potash, even when applied in soluble form, become more or less

fixed in the surface soil and never benefit to any extent, if at all, the deeper-rooted plants. Their influence is almost entirely in stimulating the growth of the finer surface-growing grasses and white clover. The latter will, of course—as referred to later—benefit the deeper-rooted grasses, but it does so by supplying them indirectly with nitrogen only. It is therefore necessary that the deeper-rooted plants should be supplied with the necessary phosphates and potash, and this can only be done by applying these materials to the land before the grass and clover seeds are sown, and having them thoroughly mixed with the body of the soil. Necessarily, too, the dressing given must be a comparatively large one, as it will have to serve for a considerable period of years. Once the plants, however, are thoroughly established, and the root systems well developed and spread throughout the lower layers of the soil, they should not suffer to the same extent from phosphate or potash hunger. Phosphates have a very powerful influence in the development of the root system of the plants, and we have here another reason for the early application and thorough working into the lower layers of the soil of a good dressing of phosphates.

A considerable addition, therefore, should be made to the phosphatic dressing applied to and for the sake of the turnip crop, and a further extra dressing when the grasses are sown out, in addition to anything that may be applied for the direct benefit of the nurse crop. On the stiffer and naturally moister soils basic slag or insoluble mineral phosphates may be used as a dressing for the benefit of the grasses, say 8 to 10 cwts. of the former or 6 to 8 cwts. of the latter, along with the turnip and again along with the nurse crop. On the lighter and dryer classes of soil, steamed bone flour or bone meal will give better results. Steamed bone flour at the rate of 4 to 6 cwts. per acre, or bone meal at the rate of 6 to 8 cwts. per acre, should be applied along with the turnip and again with the nurse crop.

These are certainly very heavy dressings of manures, but on the other hand, where spread over a large number of years, the expenditure per annum is not a large one, and will certainly be more than repaid in the improved pasture.

As regards potash, this ingredient will seldom be required on clay soils, but if it is considered necessary, a pure salt, say muriate of potash, should be used. On the other hand, light soils will nearly always be benefited by an application of potash. Kainit is the best manure for such soils on account of its valuable effect in keeping them moist, an influence that it exerts, partly because it has to be used in much larger quantity than the purer salts, in order to supply an equivalent amount of potash. Potash also tends to diminish or prevent the growth of bent-grass (*Agrostis*), possibly by stimulating

the clovers, which compete against it. If potash is applied to clay soils, 1 cwt. muriate of potash, along with the turnips, should be sufficient. On light soils, on the other hand, at least 4 cwts. of kainit should be applied to the turnips as well as an equal amount to the nurse crop.

Seed Mixtures.

Leaving for a moment further consideration of the preparation of the land, we turn to an equally important matter—the choice of the grass and clover seeds, and the making up of mixtures suitable for the different classes of soil. It is, of course, absolutely essential that only the best quality of seed should be used. In the past, seeds of any kind or quality, provided they were low priced—even the sweepings of hay-lofts—were often considered good enough for permanent pasture; but to use such material would, at the very outset, doom all our efforts to secure good pasture to failure. Good seed is seldom, if ever, too dear—bad seed, no matter what the price, is always too dear. The best should always be selected, and only after the choice has been made should the price be taken into consideration.

As regards the choice of varieties to be used, while a good deal may be learned from an examination of the grasses growing naturally on waste places in the district, such as roadsides and ditches, it would be a mistake to limit our choice entirely to the plants found there. Many excellent grasses may not be able to compete against the grasses and weeds growing naturally on such waste ground, but yet may do well when sown on soil which has been made suitable for their growth by being cleaned and liberally manured. Similarly, all the grasses found growing naturally should not be included, because luxuriant growth does not necessarily mean good quality.

The principal points that we must take into consideration in making our choice of grasses and clovers are:—

(1) Suitability for particular soil and climatic conditions.
(2) Period of duration.
(3) The habits of growth of the different plants.

(1) *Suitability.*—All the plants that are usually sown in seed-mixtures do best on good fertile soils, but some kinds do much better than others on the more extreme soils. While all plants do best if they get a sufficiency of moisture, others are able to withstand drought to a considerable extent, and to do well under dry conditions. The following list shows the plants that

may be expected to do best on light dry soil and in dry climates:—

Smooth-Stalked Meadow Grass.	Tall Oatgrass.
Hard Fescue.	Kidney Vetch.
Crested Dogstail.	Burnet.
Golden Oatgrass.	Yarrow.

In comparatively moist climates and on moist soils we have a greater choice, as we may include some of the plants suited for the drier conditions; as, if a dry season comes, the moisture-loving plants may suffer, but the drought-resisting plants will assert themselves, and will be able to keep fresh and green much longer. As complex a mixture as possible should therefore be sown for permanent pasture, so that there may always be present as large a proportion as possible of plants suited to the prevailing weather conditions. This, of course, within limits, as it would not be advisable, say, in a very dry soil, to use plants specially suited for moist conditions, as even in a wet season on such soils these would not have sufficient moisture.

The following is a list of the grasses that do best on the heavier, damper classes of soils and in wet climates:—

Timothy.	Tall Fescue.	Rough-stalked Meadow Grass.
Meadow Foxtail.	Alsike Clover.	Fiorin.
Meadow Fescue.		

Grasses like Cocksfoot and Perennial Ryegrass will grow quite well on all soils except the very lightest.

While the best grasses flourish on good soils and under good conditions, and when eaten down come up quickly again, it should be kept in mind that, if the conditions deteriorate, as they usually do on permanent pastures, these plants become weaker, and when eaten by stock have not the same recuperative power, with the result that the second-rate plants, which are able to thrive and have more staying-power under less favourable circumstances, and which are often neglected by stock, gradually get the upper hand, and ultimately take possession.

(2) *Period of Duration.*—We may divide plants into two classes according to the duration of their growth—viz., short-lived and long-lived. The following is a list of the chief plants belonging to each class:—

Short-Lived Plants.

Italian Ryegrass. Perennial Ryegrass. Red Clover.

Long-Lived Plants.

Cocksfoot.	Meadow Foxtail.	Burnet.
Timothy.	Crested Dogstail.	Chicory.
Fescues.	Meadow-grasses.	Kidney Vetch.
Alsike Clover.	Tall Oatgrass.	Yarrow.
White Clover.	Golden Oatgrass.	

The short-lived plants come away very rapidly and reach their maximum development during the first season, but they soon exhaust themselves, and either die out or become so small that they are of very little value in the pasture. The long-lived plants, on the other hand, are slower in growth at first, and therefore are much later in reaching their maximum development.

We may trace several stages in the history of a pasture, and these gradually change one into the other, and at no time is the proportion of grass and clover plants present in the proportions in which the seeds were sown. Of course, the length of the stages will depend greatly on the soil and the treatment, but it will assist us in making a well-balanced mixture in this respect if we consider the changes that take place under average conditions.

In the first year the short-lived plants, chiefly ryegrasses and red clover, are most prominent, even although only a small proportion of seeds of these have been sown. In the next two or three years the ryegrasses and red clover will become gradually less and their place will be taken by some of the longer-lived plants, especially cocksfoot and timothy, and white clover will begin to come in. After four or five years these grasses will become less prominent, white clover will have become more so, and other grasses like fescues, meadow foxtail, crested dogstail, meadow-grasses, bent-grass, and Yorkshire fog will be present in increased and varying quantity.

With regard to perennial ryegrass, its perennial character will depend largely on the character and condition of the soil. If these are good it will grow vigorously up to the third or fourth year. If, on the other hand, the soil and climate do not suit it, it will be past its best by the end of the second season. It rarely actually dies out of the pasture, however, as a close examination will show that the plants are there although they are very small. Even under the best conditions it seems to

undergo a resting stage for a period of two or three years, and may be found growing in all pastures after a period.

With regard to the red clover, there are two distinct varieties—viz., broad-leaved and late-flowering, and while neither kind is perennial the late-flowering usually lasts rather longer, there being always a few plants of it left after the broad-leaved has disappeared.

Care should be taken, however, not to sow too much red clover in the mixture, as where it grows luxuriantly it has a very detrimental effect on the slow-growing plants. In buying red clover preference should always be given to English-grown seed.

Alsike, under suitable conditions, usually lasts for a few years, and as it often grows on soils where red clover may be deficient it should be included.

Of white clover we have two different kinds now in use—viz., ordinary cultivated white and wild white. Both have the same habit of growth—a prostrate spreading habit—which marks them out as being specially suitable as bottom plants. Of the two, wild white is distinctly more lasting than the ordinary, and should, therefore, always be used for purposes of permanent pasture. The value of this plant cannot be exaggerated. Where the plants take hold they very quickly spread over the surface and fill up every little bare space with their spreading leafy runners. Not only do they form a very valuable addition to the pasture, supplying, as they do, material of a very high nutritive value, but they keep the pasture free from weeds, and also in an indirect way stimulate greatly the growth of the grasses, and more particularly the deeper-rooted ones. So great is the growth of the runners of wild white clover on soils in suitable condition for it that care must be taken to sow only a comparatively small amount of the seed, otherwise it may take entire possession and eventually crowd out all the other surface-growing plants. Although white clover is undoubtedly the most highly nutritive of pasture plants, clover alone has too great a tendency to scour stock, and therefore we must have a fair mixture of grasses always along with it.

It is very important in making up mixtures for permanent pasture to have a proper balance of the two classes. If too large a proportion of the quick-growing, short-lived plants is used in the mixture they shade out the slower developing, longer-lived plants to too great an extent, especially if too small a proportion of the latter is sown, and therefore when the short-lived plants die out, or get into a weakly condition, there is nothing to take their place and the pasture very

quickly gets filled up by pluff, bent, and other worthless weeds. On the other hand, if too small a proportion of short-lived plants is used there is a danger of weeds getting in during the first year.

Every grass has also its own particular season of growth. None of the grasses remain equally fresh and green all the year round. As we, however, wish to have fresh pasture for as long a period as possible, our mixture should include varieties having different seasonal periods of growth. For example, in the first year the quick-growing ryegrasses and red clover are, of course, most prominent in the early spring. If hay is made it will be found that the aftermath will consist mainly of red clover, cocksfoot, and Italian ryegrass. When they get established, cocksfoot and meadow foxtail are very early in spring; in fact, the presence of cocksfoot in quantity in a pasture always ensures early grazing. This grass usually grows vigorously during the whole summer, but in late autumn, and especially in winter, its growth practically ceases, and pastures containing a large proportion of it become very "blae" in appearance.

Perennial ryegrass, timothy, and the fescues are a few weeks later than cocksfoot. While the last two keep fairly fresh during summer, the first becomes very bare and brown about midsummer, especially if the weather is dry. In autumn it again recovers, however, and remains fresh and green during the winter months.

Crested dogstail and the meadow grasses are fresh and green during the winter and early spring months. For this reason crested dogstail should be included in mixtures for pastures that are to be grazed by sheep during the winter months.

White clover is at its best for a few weeks during summer, while in autumn and during winter it is not at all prominent.

If, therefore, a proper selection of grasses and clovers is made from the above mentioned, we should be able to get fresh pasture practically all the year round.

(3) *Habit of Growth.*—As regards habit of growth, we have two classes — top and bottom plants. The top plants are characterised by an upright habit of growth and a tendency to grow in tufts. The largest growing plants show this tufty habit most markedly, cocksfoot being chief in this respect. When only a small quantity of seed is sown, and especially if on good land and if there is a comparatively large proportion of short-lived plants, the individual plants of cocksfoot will be very large and coarse, and will readily go into ear and be neglected by stock. If, however, a larger quantity of seed is

sown, and if the proportion of short-lived plants is not too large, it will be found that the individual plants of cocksfoot will be much smaller, they will go into ear less readily, and will, therefore, be much more palatable and nutritious.

Top plants are generally deep-rooted, and have big, broad, spreading leaf-blades, giving bulk to the herbage. Their principal weakness is that when sown alone or in large proportion they leave the bottom too open and thus allow too readily the entrance of weeds.

The bottom plants, on the other hand, are dwarfer and have a more spreading habit of growth, and the leaf-blades are usually smaller and narrower, and therefore, as they form a close sole, help to keep out weeds. They are generally surface rooted, and although not so bulky as the top plants, are usually of better feeding quality, or at any rate do not so readily get into a coarse unpalatable condition.

The best results, however, can only be got, looking to both quantity and quality, where a proper balance is kept up between these two classes. The top plants produce by far the most food, and the maximum number of stock will be kept if we have as many top plants as possible and a sufficient quantity of bottom plants to fill up the spaces between them. Among top plants the best for the purpose in view are—red and alsike clovers, cocksfoot, timothy, tall and meadow fescue, and meadow foxtail, while the best of the bottom plants are perennial rye-grass, rough- and smooth-stalked meadow-grass, crested dogstail, sheep's fescues, white clover, kidney vetch, and yarrow.

Making up Seed Mixtures.

Different methods have been advocated at various times for compounding mixtures of grass seeds. While these methods are useful in that they enable us to keep an exact record of what has been sown, they are, unfortunately, very difficult of application in practice, chiefly owing to the varied circumstances of soil and climate that must necessarily be taken into consideration. Practically no two cases are the same, and no one can say with any degree of exactitude what will give the best results under any single set of circumstances. All that we can do is to make use of former experience and the results of experiments which have been carried out under conditions of soil and climate somewhat similar to those we are dealing with.

Now, it has been found that the total number of seeds required for permanent pasture will vary within wide limits,

say between 15 and 20 millions per acre. Extreme soils generally require more seeds than medium soils, as on the former the plants do not grow to the same size and a larger number is therefore necessary to cover the ground. Where the tilth is good a smaller number of seeds will be required, because on a cloddy soil many of the seeds never germinate at all, partly because they do not get sufficient moisture, and even if they do germinate many of the plantlets are unable to send their rootlets into the soil and therefore die out. This is especially true of the smaller seeds, and therefore where a mixture contains a large number of the smaller seeds a proportionately larger total must be used per acre than where the mixture consists more largely of larger seeds. Again, there is a considerable difference in the area of the ground covered by the different plants. Top plants, with their tufty habit of growth, will occupy comparatively less space than the bottom plants with their spreading habit of growth, and therefore we must use, proportionately, a larger number of seeds of the top plants as compared with the bottom plants.

A very important point which must be taken into consideration, and which will influence greatly the total weight to be used, is the quality of the seed. Where the quality is low a proportionately larger weight must always be used, and this must be calculated from the "Real Quality" of the seeds.

Real Quality means the percentage of pure and germinating seeds present in the sample. Thus, if the purity of a sample of perennial ryegrass is 98 per cent and the germination 92 per cent, the real quality is

$$\frac{98 \times 92}{100} = 90{\cdot}16 \text{ per cent.}$$

That is, in every 100 lb. of seed of this sample of perennial ryegrass there are 90·16 lb. of pure germinating ryegrass seeds.

The number of seeds in 1 lb. must also be taken into account, as there are considerable variations in the size of the seeds of different samples, and therefore great differences in the number of seeds per lb. Thus, in red clover the number may vary from 200,000 to 300,000 per lb. In the following table we show the number of germinating seeds per lb. in average samples.

Subject to the alterations required by the varying conditions referred to above, we would recommend the following mixtures for permanent pastures for the different classes of soils :—

	Real quality of average seeds.	Number of germinating seeds in 1 lb. of average samples.	Good loamy soils.	Clay soils.	Light soils.
	per cent.		lb.	lb.	lb.
Perennial ryegrass	90	207,000	6	8	6
Cooksfoot	85	400,000	7	8	12
Timothy	95	1,150,000	3	4	2
Meadow fescue	90	225,000	5	4	...
Tall fescue	90	190,000	...	4	3
Meadow foxtail	80	400,000	4	5	...
Rough-stalked meadow grass	90	2,000,000	1	1½	...
Smooth-stalked meadow grass	80	1,600,000	1	...	2
Crested dogstail	90	810,000	...	...	2
Hard fescue	80	480,000	...	...	2
Broad-leaved red clover	95	223,000	1	1	1
Late-flowering red clover	95	200,000	½	½	½
Wild white clover	90	720,000	¾	1	½
Alsike clover	95	680,000	1	1½	1
Kidney vetch	95	190,000	...	...	2
Chicory	120	300,000	...	1	2
Yarrow	90	3,000,000	...	...	⅛

At the present time some of these seeds are unobtainable, and those that can be got are dear, but we hope that by the time the land to be restored to pasture is ready for seeding there may be a sufficient supply of good germinating seeds of all kinds, and that they may be much cheaper all round.

Nurse Crop.

There are several important points to consider in the choice of a nurse crop. If a cereal is to be used the variety chosen should not produce a heavy leafy growth of straw, as this will shade out the young seedlings too much. For the same reason it should be thinly sown. The variety should also be strong in the straw so that it may not readily lodge, and it should also be early in ripening so that it may be removed early in the season in order to give the young grasses and clovers a chance of recovery before winter sets in. Now, the cereal that meets these requirements best is barley. On stiff clay soils not suited for barley, bere should be used, and where the soil is suited for neither bere nor barley, an early strong strawed variety of oats should be used.

Rape is sometimes used as a nurse crop. It is very useful on the lighter classes of soils where the trampling by stock in autumn in eating it off would considerably benefit the young

grasses and clovers. A comparatively small amount of seed, say not more than 4 lb. per acre, should be sown.

Preparation of the Seed Bed and Sowing the Seeds.

Special attention must be paid to the condition as regards tilth, as on the fineness of this will depend to a considerable degree the uniformity of the braird of grasses and clovers.

On light soils it will be found, except, of course, in a wet spring, that the lack of moisture for the germination of the seeds will be the chief difficulty in getting a good braird. The turnip crop should be lifted early and the land ploughed as early as possible. This will not only help the soil to retain any rain that may fall, but will also allow time for it to consolidate and so renew more readily the connection with the soil underneath before the seeds are sown. On light soil the seeds should be sown rather deeper than on heavier soil in order to secure a sufficient supply of moisture for germination. The seeds should therefore be sown on the harrowed surface, be harrowed with a light or chain harrow, and rolled in. If the soil is in a loose dry condition, however, it will be better to roll first, in order to consolidate it before sowing the seeds.

On heavy soil there is often great difficulty in getting a good tilth, but if it has been well drained and well limed it should be in a more friable condition. If it is cloddy it should be rolled in order to break the clods, the seeds sown on the rolled surface, the land then harrowed and lightly rolled in order to make the surface as level and smooth as possible.

On medium soils, if there is a good tilth and if they have been ploughed sufficiently long to consolidate the soil, it will generally be sufficient to sow the seeds on the harrowed surface, give a light harrowing, and finish up by rolling. On the other hand, if the ploughing has been recently done, it would be well to roll first, sow the seeds, give a light harrowing, and finish up by rolling.

Great care should also be taken in getting the seeds well distributed. If carelessness is shown in this respect the pasture will suffer afterwards. For example, if the seeds are sown in a windy day it will be found that there will be strips of the heavier seeds and of the lighter seeds, and some parts may get no seeds at all. The seeds comprising the mixture should be thoroughly mixed and a calm day chosen for sowing them. Although it entails rather more labour, the best results will be got if the light and heavy seeds are sown separately, the one class in one direction and the other at right angles to that.

After Treatment.

Much of the success of the pasture will depend on the treatment during the first few years. As much permanent pasture is sown near policies where the fields are surrounded by trees, and thus very much sheltered, the nurse crop may stand some considerable time in the stook before it is in a condition for stacking. The stooks should therefore be frequently shifted, otherwise great damage may be done by rotting out many of the small plants.

It will be an advantage, especially for the clovers, to roll the new grass in early winter, when the soil is dry, and again in spring.

If the grass has grown so much in the autumn that there would be a danger of its rotting out during winter, it should be grazed lightly with young stirks when the weather and soil are dry. This should be done sufficiently early to enable the grass to again start to grow before winter sets in. Great care must be taken not to injure the young grass during winter or spring by grazing, especially with sheep. On no account should stock be put on pasture if the soil is at all wet, otherwise incalculable harm will be done from which the pasture will never recover, and this is especially the case on heavy clay soils.

If a young pasture be examined in spring it will be found that there are numerous small bare spaces. Now, we want to get these spaces filled up with good plants as soon as possible, and get a close sole in order to keep out weeds and prevent the evaporation of moisture. Under such circumstances the pasture should not be grazed early in spring, but the plants should be allowed to develop strongly so that they may tiller well and fill up these bare spots.

If young stock, and especially sheep, are put on at this time they not only eat the young growing blades and so prevent the plants growing, but they also pull out many of the small plants by the roots. It should be kept in mind that there is a very much larger proportion of small, slow-growing plants in a permanent pasture than in a temporary one, and that on this account the permanent pasture is much more readily injured. Even the treading of the stock may do considerable damage to many of the plants at this early stage.

For these reasons it is better that the first year's grass be hayed rather than grazed, but the hay must be cut at least three to four weeks earlier than is usually the case, otherwise many of the slower-growing plants will get crushed out by the more vigorous quick-growing ones. After the hay is removed the pasture should be allowed to get well up before stock are put on. If this system is followed a good close sole ought to be obtained, and once this is well established no great difficulty

ought to be experienced in maintaining it if ordinary care is exercised.

Careful consideration should be given to the influence which grazing by different classes of stock has on the pasture, and to the order in which they should be put upon it. The best results will be got, and the pasture will be most uniformly eaten if different kinds of stock are grazed on it, either alternately or together. If sheep only are grazed on a pasture for the whole season, they will eat the small plants at the bottom and will leave the stronger, less nutritious, ranker plants alone. This will weaken the good grasses and will encourage the growth of the strong plants, so that they will ultimately take almost entire possession.

Cattle, especially fattening animals, also eat the small fresh plants, but as their mouths are much larger they are not able to do so much damage, as they don't eat so close, and so must necessarily eat some, at least, of the rougher herbage.

Lean hungry stirks and horses are, however, very useful for eating much of this rough herbage that the other animals refuse.

On good pastures possibly the most profitable way is to graze first of all, when the grass is at its best, with fattening cattle or cows, then, after the flush is past, with sheep and stirks or horses. On poorer land not fitted for fattening it may be grazed with sheep for a short time, and then stirks be put on to eat what the sheep have refused, or sheep and stirks may be put on at the same time.

It is very important not to have a pasture eaten too bare in early summer before dry weather sets in. A well-covered pasture is able to withstand drought much better than if it is eaten bare. On the other hand a sufficient number of animals must be put on to keep the grasses from seeding. This is especially necessary on the lighter classes of land, on which they go into ear most readily. The feeding value of a pasture deteriorates much more quickly if the grasses are allowed to seed.

Another important point to remember is that stock should always be kept on the driest land during wet weather. With regard to winter grazing it would be well to confine this to the oldest and driest pasture until the turf of the younger has become sufficiently firm to bear the weight of the stock without doing any injury.

We have already pointed out that there is a tendency for stock to eat down some pasture plants and to neglect others, and that, therefore, if continually grazed, it tends to deteriorate so far as the composition and palatability of the herbage are concerned. This deterioration may be largely corrected by taking a crop of hay from the pasture occasionally, say every sixth year. The coarser-growing plants will form the bulk of

the hay, and the mowing will temporarily weaken them and give the other plants a chance to re-establish themselves more strongly. Indeed, if through neglect the coarse-growing inferior plants have got too much the upper hand, the pasture should be mowed twice in the season, both cuttings being made before the hay becomes too rank, otherwise the finer plants may be kept too much in check by shading.

In all pastures there are found unsightly patches of rough grasses that the animals refuse to eat. These patches are usually due to the droppings of cattle and horses. Now, if the whole of the pasture is to be properly utilised, the droppings must be removed before they rot and damage the pasture. We have no doubt it would pay to go over the fields periodically, say once a fortnight, and remove the droppings, which could be heaped up and used as a top-dressing. If there is a large number of these uneaten tufts, the mower should be run over the field. If this is done, green fresh blades will come up that the animals will eat much more readily. If the cattle are being cake fed on the pastures, the feeding-boxes should be frequently shifted, because not only do the stock trample out the grass round these, but they also leave a large proportion of the dung near them.

The pastures on the better classes of land, especially where the cattle are being fed on cake and corn, require very little in the form of manures applied to them, as fattening stock remove very little of the fertilising constituents from the soil. In such pastures there is generally a good deal of white clover, and as white clover will accumulate nitrogen from the atmosphere and pass it on to the grasses, the cheapest way to manure the pasture is to encourage the growth of white clover, and this can best be done by the occasional application of basic slag or lime compost along with superphosphate.

On the lighter classes of soil, however, more than this will be required. Here, dressings of potash will be necessary in addition to the phosphates. The pasture should also be dressed occasionally in the autumn with well-rotted farmyard manure. An occasional dressing of a compost of earth and lime will also be beneficial.

Finally, the drains and ditches should always be kept in good running order, and if water tends to stand on the surface at any part of the field, channels should be made to run it off. If the water is allowed to stand for any length of time the soil is apt to get sour and the grass is rendered useless. The harrows should be run over the pasture in early winter in order to aerate the surface soil and to keep moss from spreading, and perennial weeds should be kept well down by continual cutting or spudding.

BRACKEN RHIZOMES AND THEIR FOOD VALUE.

By Professor JAMES HENDRICK, B.Sc., F.I.C., University of Aberdeen.

During 1917 and early 1918, when the food position in this country gave cause for anxiety, and when there seemed little prospect of an early victorious end to the war, it was important to investigate all possible sources from which food for human beings or for stock could be produced without putting any further strain on our shipping. Among other things, the rhizomes or underground stems of bracken seemed to offer possibilities which were worth investigation, and consequently an inquiry into their composition and food value, and the methods of harvesting and preparing them for use was begun early in 1918, under the auspices of the Ministry of Food. Although the special circumstances which led to this inquiry have now, happily, passed away, it is worth placing on record the results of the inquiry so far as it went.

Bracken is found in great abundance in woodlands and rough lands in Scotland, and in many places it has overrun good pastures. It is said that bracken areas have greatly increased during the past forty or fifty years, especially in those districts where cattle have been replaced by sheep, and that large areas which were once good pasture have in consequence been ruined or, at any rate, much deteriorated. It does not seem to be possible to obtain any statistics as to the extent to which this has taken place.

The damage caused by the spread of bracken on hill grazings was so great that in 1903 the Society offered premiums for machines or implements for cutting or destroying bracken. A considerable amount of investigation into methods of eradicating bracken has taken place in recent years.[1] These investigations have almost entirely dealt with the frond or above-ground part of the bracken, which begins to grow about April or May, reaches its full luxuriance in July, and dies down again about October.

Some attempts have also been made to utilise the fronds as food for stock, especially when they are young. On the other

[1] Bracken (*Pteris aquilina*), Life History and Eradication. By G. P. Gordon, B.Sc. 'Transactions,' 1916, p. 92.

hand there is some evidence that they are poisonous when partaken in quantity by animals, particularly when they are fully grown, and the poisoning which thus arises is known as bracken poisoning.[1]

The ash of the fronds has been found to be particularly rich in potash, and proposals have been made during the war to combine eradication of bracken with production of potash manure by cutting down the fronds and burning them, and using the ash as a manure on account of its high content of potash.[2]

The frond of bracken springs from an underground stem or rhizome which is commonly known as "bracken root." This consists of strong dark-coloured rods, which are found a few inches below the surface of the soil and vary in thickness from that of a lead pencil to that of an adult finger. They are many feet in length and branching, and in land well stocked with bracken form an interlacing mat of rods three to six inches below the surface.

These rhizomes or root-stocks have been used as food for pigs and other stock in various parts of the world, and even as food for human beings. During the war reports were received that with food scarcity in other countries, including enemy countries, their value as food was again being tested. It seemed fitting, therefore, that some investigation of their food value should be made in Scotland, in which bracken occurs to so great an extent, and in which expense was being incurred to eradicate it as a pest.

A number of experiments were made to determine the crop of rhizomes which could be obtained per acre, and this was found to be surprisingly large on land well-stocked with bracken. It varies greatly with the conditions and, as might be expected, is greatest on good deep soil, on which the fronds grow to great size and very thickly. On such a soil the crop in one case, in which the produce from 200 square yards was weighed, was found to be over 53 tons per acre in the unwashed state, or 43 tons per acre of clean rhizomes washed free from earth and dirt. In this case the fronds covered the ground so thickly that they smothered out nearly all other vegetation. In other cases, where the bracken was not growing so thickly or so strongly, crops at the rate of 25, 16, and 13 tons per acre of washed rhizomes were obtained. It is evident, therefore, that heavy crops of this material are to be obtained from land which is thickly covered with bracken.

[1] Bracken Poisoning in Cattle in Great Britain. By Sir Stewart Stockman. 'Jour. of Comp. Pathology and Therapeutics,' xxx., part iv., 1917.

[2] A Report on the Results of Experiments on Bracken Utilisation and Eradication. By R. A. Berry, F.I.C. Bulletin No. 80, West of Scotland Agricultural College.

Most of the land which is overgrown with bracken is either rough and stony hill or woodland. In some cases, however, bracken is to be found on good and comparatively level land on which horses and implements could be worked. In such cases it should not be difficult or expensive to harvest the crop of rhizomes. On the other hand, in woodland the trees and their roots seriously interfere with this operation and make it so difficult as to be practically impossible. On rough stony land the difficulty varies according to the nature of the land. On most rough hillsides the crop could only be harvested by laborious hand labour, which would probably render it too expensive to be of any practical use.

In the experiments which I carried out in order to determine the weight of crop per acre, and to obtain a supply of the rhizomes for feeding trials, hand labour was employed. It was found that if the land was cut into squares with spades and turned over, the rhizomes which were thus cut into short lengths, could be easily shaken out with graips and separated quite satisfactorily from the soil and other foreign matters. Although I had no opportunity for trying it, there is little doubt that on land on which tractors or horses and implements could be used, the crop could be ploughed out, especially if a disc or other suitable cutting implement were attached in front of the plough to cut the rhizomes to a depth of about six inches. The crop could thus be separated from the earth and collected with graips. Possibly in some cases this would be an easier and cheaper method of destroying bracken on infested land than the laborious method of repeatedly cutting the fronds over a period of two or more years.

A large number of samples of bracken rhizomes obtained from various parts of Scotland at different times of year were analysed. The composition of a number of these is shown in Table I., and for comparision the average composition of potatoes is given.

The bracken root samples were all collected between May and August. When those obtained from Mugdock Wood were gathered, the fronds had already begun to grow though they were not yet uncurled. These samples were obtained from the locality where a few tons of the rhizomes were dug for the feeding and meal-making experiments which are described below.

Samples were also taken from two different places in rough woodland at Craibstone, the experimental farm of the North of Scotland College of Agriculture. From each of these two places, distinguished in Table II as "A" and "B," ten samples were taken, distributed systematically throughout the whole year from the beginning of April 1918 to March 1919.

TABLE I.—Composition of Bracken Rhizomes.

Locality.	Mugdock Wood, Milngavie, Glasgow.		Pitmedden, Aberdeenshire.	Braemar, Creag à Bhuilg.			Average, 6 Samples.	Potatoes.	
				1200 Feet.	1800 Feet.	1500 Feet.		Average of 136 American Samples.[1]	Arran Chief, Average of 52 Samples.[2]
Date gathered	8.5.18	23.5.18	11.7.18	8.8.18	8.8.18	13.8.18			
Composition of Original—	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Moisture	79·59	77·53	71·00	69·98	75·43	69·79	73·89	78·3	76·7
Ether extract (oil, &c.)	·25	·07	·59	·26	·25	·39	·30	0·1	…
*Albuminoids	1·39	1·24	2·12	·85	1·15	·75	1·25	2·2	2·2
Soluble carbohydrates	12·02	13·10	14·15	19·95	15·48	20·26	15·82	18·0	…
Fibre	4·54	6·35	7·84	6·87	5·88	6·67	6·36	0·4	…
†Ash	2·21	1·71	4·30	2·09	1·81	2·14	2·38	1·0	…
	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·0	…
*containing total nitrogen	·22	·19	·34	·13	·18	·12	·20	·35	·35
„ protein nitrogen	·21	·19	·29	·13	·18	·12	·19	…	…
† „ siliceous matter (sand, &c.)	·82	·55	3·40	·74	·56	·67	1·12	…	…
Composition of Dry Matter—									
Ether extract (oil, &c.)	1·22	·31	2·03	·85	1·01	1·29	1·12	·5	…
*Albuminoids	6·81	5·51	7·32	2·83	4·68	2·48	4·94	10·1	9·4
Soluble carbohydrates	58·91	58·30	48·78	66·68	63·42	67·08	60·53	83·0	…
Fibre	22·24	28·25	27·05	22·68	23·52	22·07	24·30	1·8	…
†Ash	10·82	7·63	14·82	6·96	7·37	7·08	9·11	4·6	…
	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·0	…
*containing total nitrogen	1·09	·88	1·17	·44	·73	·39	·78	1·6	1·5
„ protein nitrogen	1·06	·88	1·00	·44	·73	·39	·75	…	…
† „ siliceous matter	4·04	2·46	11·71	2·46	2·28	2·21	4·19	…	…

[1] Food (War) Committee, Royal Society. Report of the Sub-Committee appointed to Inquire into the Composition of Potatoes grown in the United Kingdom, p. 1.

[2] Ibid., p. 5.

This was done to test the variation in the composition of bracken rhizomes throughout the year. The complete results of these analyses will be discussed elsewhere, and only the average results of the ten analyses from each place are shown in Table II.

TABLE II.—Composition of Bracken Rhizomes from Craibstone. Averages, each of 10 Samples.

Series.		Moisture.	Ether Extract.	Albuminoids.*	Soluble Carbohydrates.	Fibre.	Ash.†	*Containing total Nitrogen.	*Containing Protein Nitrogen.	†Containing Siliceous Matter.
		per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
A.	Original . .	71·10	·23	1·19	19·38	6·17	1·93	·19	·16	·93
	Dry matter .	...	·82	4·18	66·49	21·59	6·92	·66	·54	3·43
B.	Original . .	70·19	·26	3·88	17·09	6·03	2·55	·62	·55	1·51
	Dry matter .	...	·87	13·29	56·51	20·68	8·65	2·12	1·86	5·08

While the figures in Table II show the average composition for the whole year of rhizomes from the two places chosen, considerable changes in composition were found throughout the year at both places. As might be expected the rhizomes became poorer both in albuminoids and in soluble carbohydrates after the growth of the fronds became active in spring. But this fall in quality lasted for two or three months only, after which the rhizomes recovered again, especially in soluble carbohydrates. Further it is important to notice that at no time were the rhizomes exhausted, or anything like exhausted, of their food stores. Thus in the case of the "A" samples, the albuminoids at the beginning of April, before the fronds had appeared above ground, were 2·09 per cent; this fell by the beginning of June to 1·01 per cent and by the middle of July to 0·44 per cent, but by the middle of August it had risen to 1·69 per cent, and in the case of the "B" samples the corresponding figures were: beginning of April 5·36 per cent, early June 4·01 per cent, middle of July 2·01 per cent, middle of August 3·44 per cent. This indicates that the stores of nitrogenous material in the rhizomes are drawn upon for frond formation until July, when the fronds are fully grown, and that after that storage of nitrogenous material in the rhizomes again begins.

Something similar was found in the case of the soluble carbohydrates, except that they were never reduced to nearly so great an extent as the albuminoids, and they began to increase again more quickly. Thus in the case of both the "A"

and "B" samples they reached their minimum in June, and the percentage was in both cases greater in August than at the beginning of April.

These facts illustrate the necessity of cutting bracken fronds early and repeatedly if the rhizomes are to be exhausted and the plants destroyed. If cutting is delayed till the fronds are fully developed, storage of food materials has already begun again. The longer cutting is delayed after the fronds are fully developed, the more food the plant is able to store in the rhizome. On the other hand, if cutting or breaking down of the fronds is carried out before they are fully developed, the rhizome is very incompletely exhausted of its food stores, and will not have much difficulty in sending up another vigorous crop of fronds. So far as these analyses go, they indicate that the best time to cut bracken is about the middle of July, as at that time the store of nitrogenous material in the rhizomes is at its lowest, and therefore the next crop of fronds sent up is bound to be much weakened for lack of nitrogenous matter.

The analyses indicate, on the other hand, that the worst time to obtain bracken rhizomes for use as food is in July, for at that time they are lowest in the valuable food constituents, albuminoids and soluble carbohydrates, and highest in the almost valueless fibre. After July they improve in composition, and are at their best in winter and in spring, when growth is just beginning. After April they deteriorate, but samples raised in April were as good as those obtained at any time of year.

It was found that the percentage of albuminoids varied greatly in different samples of bracken rhizomes. This is very markedly shown by the "A" and "B" samples from Craibstone (Table II.) The average of the ten "B" samples shows more than three times the albuminoids in the average of the ten "A" samples. Not only so, but every individual "B" sample contained a far higher percentage of albuminoids than the corresponding "A" sample. In some cases it was seven times as great.

Some analyses were also made of the fronds from "A" and "B," and it was found that this peculiarity extended to them also. Fronds grown at "B" were much more nitrogenous than those grown at "A," though the relative difference was not quite so great as in the case of the rhizomes.

In certain respects bracken rhizomes resemble potatoes in composition. In Table I. some average figures for potatoes are quoted from the recently issued Report of the Food (War) Committee, Royal Society.[1] The figures for "Arran Chief" are given as those of a potato of good quality, above the average in

[1] Report on the Composition of Potatoes grown in the United Kingdom. Food (War) Committee, Royal Society, 1919.

dry matter and in nitrogen. As compared with the potato-tuber, the bracken rhizome contains more dry matter, but the dry matter is not quite so high in soluble carbohydrates, and is much more fibrous. In albuminoids it has already been seen that bracken rhizomes vary greatly. Potatoes are not so high in this valuable constituent as the " B " samples from Craibstone, but are higher than the "A" samples and than the samples in Table I.

In the case of the potato the main part of the solid matter consists of starch, which forms most of what is called " soluble carbohydrates." Bracken rhizomes also contain starch in considerable quantity, but, unlike the potato, the larger part of the soluble carbohydrates does not consist of starch, but of other substances of an undetermined nature.

In order to test whether animals would eat bracken rhizomes, and if so whether they would thrive upon them, a number of feeding trials were made with different classes of stock. It had already been reported from various sources that pigs will root up and eat bracken rhizomes, and it is recorded that these have been used in Europe as human food in times of scarcity. It is also on record that they formed a portion of the food of the natives of New Zealand at the time of the discovery of that country by Captain Cook. Attempts were made in our experiments to feed these rhizomes to pigs, to cattle, and to poultry.

On account of the many difficulties of the times it was almost impossible to arrange accurate feeding trials in 1918. Many people were suffering from lack of food stuffs, and were quite ready to give any promising new substance a trial, but very few had the necessary time and labour for weighing out foods and weighing stock, and otherwise giving the attention required for carrying out a reliable feeding experiment.

Some rough trials were first made, and these showed that at any rate bracken rhizomes were not very palatable to stock. Pigs would not eat them if they were already accustomed to a liberal diet, especially of concentrated foods. They took them only when they were in lean condition and, generally speaking, breeding stock consumed them more readily than feeding stock. It was also discovered that pigs ate them more readily if the rhizomes were given to them in the rough state, just as they were dug from the soil. It was at first assumed that if they were cleaned, chopped, mixed with other food, and cooked, the animals would consume them more readily. This proved to be quite wrong. Whether mixed with other foods or not, pigs liked them better uncooked and unwashed.

The rhizomes were also tried in the form of meal. A few tons were dried in a malt kiln, after which it was found that

they could be readily ground to meal. Indeed they could be ground too readily, for the workmen who carried out the milling raised serious objections to the work on account of its excessive dustiness. The meal so obtained was found to have the following composition:—

Moisture	9·81 per cent.
Ether Extract (Oil, &c.)	2·54 „
*Albuminoids	9·56 „
Soluble Carbohydrates	41·26 „
Fibre	20·49 „
†Ash	16·34 „
	100·00
* Containing Total Nitrogen	1·53 „
„ Protein Nitrogen	1·49 „
† „ Siliceous Matter (Sand, &c.)	11·26 „

The rhizomes which were dried were dug in May, when considerable growth of frond had already taken place, and they were not therefore of such good composition as if they had been dug a month earlier. It was found impossible, in view of the labour conditions then prevailing, to have them washed. This accounts for the high percentage of ash and of sand which they contained.

Some feeding experiments with pigs and poultry were carried out with the help of members of the staff of the West of Scotland College of Agriculture, and the results are detailed in Bulletin No. 89 of the College, "Report on Experiments on the Feeding Value of Bracken Rhizomes for Pigs and Poultry." Preliminary trials were made at Holmes Farm, Kilmarnock, in which it was shown that breeding sows would eat considerable quantities of the rhizomes without any evil effect, but that well-fed feeding animals could not readily be induced to eat them. Then, through the kindness of the Directors of the Scottish Co-operative Wholesale Society, and of Mr Geo. C. Young, their manager, a more accurate test was made on two pens of pigs at Calderwood Estate, East Kilbride, under the supervision of Mr James Wyllie, B.Sc., of the West of Scotland College. These pigs had been somewhat short of food, and as their appetites were not pampered, they ate their allowance of bracken, whether in the form of untreated rhizomes or ground into meal, with apparent relish. But the results of the experiment were unsatisfactory, as the pen of pigs which got bracken in addition to the foods given to the other pen showed very little benefit from the extra food. The pigs which got bracken made a live-weight increase of 0·77 lb. per head per day over a period of 140 days, while those without it made an increase of 0·71 lb. per head per day. The small

increases made all over were due to the poor diet on which the pigs were kept owing to the scarcity of feeding-stuffs, but the pen which had from 1 lb. up to 2 lb. of bracken meal per head per day as an addition to their ordinary diet did very little better than the others.

Mr James Picken, Milton, Kirkcudbright, also tried both the untreated bracken and the meal with pigs, but was not in a position to do any weighing. He reported, however, that the pigs ate the bracken "with evident relish," and that it could "well replace other fresh vegetable food during the winter and spring months." Mr Picken also noted that the bracken appeared to make the pigs lively, and that those which received it took more exercise than the others. He remarks: "This is a decided advantage to pigs 6 weeks to 4 months old, but over that age and during the fattening period it might be necessary to withhold the roots, as these might unnecessarily excite the pigs and thus delay the fattening process."

The evidence, so far as it goes, indicates that bracken rhizomes in the fresh state or as meal might be of some use as a maintenance food for pigs, but are not of much use as a fattening food.

With poultry the results were still less favourable. The experiments were carried out with bracken meal at the Poultry Department, Holmes Farm, Kilmarnock, by Miss Agnes Kinross of the West of Scotland Agricultural College. The birds did not like the bracken meal even when it was mixed with a considerable amount of other food, and the pen which received a little bracken in their food during October and November did not lay so well as others which received no bracken meal but an equivalent in other foods. The experiment indicates that bracken meal is not a suitable food for egg-production.

Bracken meal was tried with feeding cattle at Craibstone, the experimental farm of the North of Scotland College of Agriculture. The quantity available was not sufficient for an experiment on a scale large enough to be satisfactory, as for that purpose 8 or 10 bullocks would require to have been fed with the meal for a period of several weeks, and the quantity should gradually have been raised to several pounds per head per day. The quantity available was only sufficient to enable two bullocks to get 1 lb. per head per day for two months. A comparison lot of two bullocks was similarly fed, but without bracken meal.

Lot 1 (bracken meal) received daily 95 lb. turnips with oat straw *ad lib.*, and 2 lb. bruised oats, 2 lb. cereal offals, and 1 lb. bracken meal.

Lot 2 received daily the same amount of turnips and straw and 2½ lb. each of bruised oats and cereal offals.

Lot 2 therefore received ½ lb. oats and ½ lb. cereal offals instead of 1 lb. bracken meal given to Lot 1.

Both animals in Lot 1 ate the bracken meal with evident relish, and they would have taken more had we been able to supply it. The increases made by the two lots were somewhat similar. In 56 days the cattle in Lot 1 made an average increase of 132 lb., or 2·4 lb. per head per day, while those in Lot 2 made an average increase of 113 lb., or 2·0 lb. per head per day. The lot which got the bracken meal therefore did slightly better than the other, but no weight can be attached to this result, as the number of animals under experiment was too small, and the amount of bracken meal fed was only a small proportion of the whole food. So far as it goes, however, the experiment shows that feeding bullocks will readily eat a moderate amount of bracken meal, and that it appears to agree quite well with them.

It cannot be claimed that the feeding trials made with bracken rhizomes are anything more than preliminary. If the food value of this substance is to be tested thoroughly, much larger and more exhaustive trials will be necessary, and far larger quantities of the rhizomes would require to be obtained for the purpose. So far as they go, however, the trials indicate, as the analysis also does, that bracken rhizomes are not rich enough in the more valuable food constituents, such as albuminoids, to be of much use for anything but maintenance purposes, and that even for such purposes their usefulness is limited by the fact that they are not very palatable to certain classes of stock. Fortunately the circumstances which gave rise to these experiments have now passed away, and there is no longer the same danger of acute food scarcity in this country. In clearing from the bracken pest land which is good enough for cultivation, it may be possible to utilise the crop of rhizomes for feeding purposes, and these experiments indicate the value of this substance as a food and its limitations. They may also be of some interest in showing that the best time to cut bracken in order to weaken the rhizome is just when the frond is fully expanded.

INVESTIGATION INTO MILK YIELD OF AYRSHIRE COWS.

A STATISTICAL ANALYSIS OF THE RECORDS OF THE SCOTTISH MILK RECORDS ASSOCIATION FOR THE YEARS 1911 AND 1912.

By J. F. TOCHER, D.Sc., F.I.C., Aberdeen.

PRELIMINARY REPORT.

(1) *Introductory.*

(*a*) *Data Examined.*—At a meeting of the Governors of the West of Scotland College of Agriculture held at Glasgow, on 30th June 1913, Dr C. M. Douglas called the attention of the governors to the large amount of valuable information collected by the Scottish Milk Records Association, and to the very interesting results which might be obtained by examining them. It was agreed to forward, through the Scottish Board of Agriculture, an application to the Development Commissioners for a special grant for this work, to meet the cost of a statistical analysis. On the 29th of August a reply was received from the Board of Agriculture for Scotland intimating that, on the recommendation of the Advisory Committee on Agricultural Science, the Board was prepared to make a grant not exceeding £200 in aid of the expenses of the investigation. The following Committee was appointed to give effect to the recommendation of the governors, namely, Dr David Wilson, Messrs J. Campbell Murray, W. H. Ralston, and John M'Caig, Major Houison-Crauford, Messrs Chas. M. Douglas, Edward Gordon, and Principal Paterson. The writer was appointed by the Committee to carry out the statistical investigation, and it was agreed that the Milk Records should be examined with a view to answering the following queries:—

I. Relation of quantity and quality; butter fat ratios of yields of five hundred gallons, six hundred gallons, seven hundred gallons, eight hundred gallons, nine hundred gallons, and one thousand gallons and over.

II. Relation of quantity and quality to age of cow; average of (*a*) butter fat ratio, (*b*) quantity of yields of cows aged respectively two years, three years, four years, five years,

six years, seven years, eight years, nine years, ten years and over ten years.

III. Relation of yield to date of calving; average yields of cows calving in each month of the year.

IV. Comparison of selected districts in respect of (*a*) quantity, and (*b*) butter fat ratio.

V. Another query bearing on the influence of sire and dam respectively upon lactation was omitted from the present investigation.

The writer was supplied with printed copies of the Milk Records Reports for the years 1908 to 1912 inclusive, and with the written records for 1911 and 1912. An examination of these Reports revealed that local Record Societies classified their cows and heifers into six classes,[1] namely:—

I. Cows yielding over 2500 gallons calculated as containing one per cent of butter fat.

II. Heifers yielding over 2000 gallons calculated as containing one per cent of butter fat.

III. Cows yielding under 1660 gallons calculated as containing one per cent of butter fat.

IV. Heifers yielding under 1330 gallons calculated as containing one per cent of butter fat.

V. Cows yielding between 1660 and 2500 gallons calculated as containing one per cent of butter fat.

VI. Heifers yielding between 1330 and 2000 gallons calculated as containing one per cent of butter fat.

The individual farms were not named in the printed records but were given distinctive letters. The numbers of cows and heifers were given for each herd, and each cow (or heifer) was identified by a number. The recorded data printed in the Reports were (1) total quantity of milk in gallons for the entire lactation period, (2) average per cent of butter fat yielded, (3) total number of weeks in milk, (4) age of cow in years, (5) date of calving, (6) date of next calving (sometimes not recorded), and (7) remarks. In addition, the actual written records contained the quantity of milk of one per cent butter fat corresponding to the observed quantity and observed butter fat percentage.

The work of noting the quantities of morning and evening milk and the percentages of butter fat daily obtained from each cow, and the relative expense, were so great as to preclude the Milk Records Association from making *daily* records. The morning and evening milk of each cow in each herd was tested at intervals ranging from 14 to 28 days. The yield of milk and the percentage of butter fat yielded by each

[1] The printed records contain only the first two and last two classes. The written records contain all six classes.

cow in the interval *were assumed* to be those given on the date of the previous test. The unit employed in the comparison of milk yields of various qualities (that is of various percentages of butter fat) was that which reckoned the yields in terms of gallons of milk containing one per cent of butter fat. This really amounts to recording the total amount of butter fat yielded by each cow during the specified interval, the yield being based upon one determination of butter fat and one determination of yield of milk during that interval. The milk was weighed and recorded in pounds, and in the records the term "gallon" is applied to the weight of ten pounds of milk, and has therefore a special meaning, and is not really the usual gallon measure. As an example of recording, suppose thirty pounds was the yield of milk from one cow on a particular date, and that this cow was again tested after an interval of fourteen days. Suppose also that the milk from this cow was found to contain 3·5 per cent of butter fat, the recorder converted the thirty pounds of milk containing 3·5 per cent of butter fat into pounds of milk containing one per cent of butter fat, or $30 \times 3{\cdot}5 = 105$ pounds of milk of one per cent quality. The recorder then multiplied these 105 pounds of milk—one day's yield—by fourteen, and thus provided an estimate of the number of pounds of milk of one per cent quality likely to be obtained during the fourteen days between the two tests, that is $105 \times 14 = 1470$ pounds of milk of one per cent quality in fourteen days. This was repeated on every occasion a test was made, and at the end of the lactation period (that is the whole period between two calvings) of the cow the total estimated yield of milk of one per cent quality was ascertained by summation. The average percentage of butter fat for each cow for the whole lactation period was found by the recorder by dividing the number of pounds of milk of one per cent quality by the total number of pounds of milk.

In printing the selected records the Association recorded the total estimated yield of milk for each cow in gallons, the gallon being, as already stated, the weight of ten pounds, and not a measure. The yield of milk of one per cent quality was entered in each case in the written records, but was not given in the printed records. It is thus clear that the yield of milk determined by the Scottish Milk Records Association during the entire lactation period is not the *actual* yield directly ascertained day by day, but an *estimated* yield based on fortnightly determinations. The same is true of the average of butter fat recorded: it is not the real average ascertained by daily determinations, but an estimated average based on fortnightly determinations.

The Scottish Milk Records Association has provided no means to the writer of testing the exact degree of relationship

which exists between the actual total yield of milk from a cow and the estimated yield based on fortnightly determinations. This is a desirable inquiry, and if data were provided it would show once and for all how closely the two were related. From *a priori* considerations the predictions from fortnightly determinations should be very close. Mr John Speir has shown that the differences between the total yields for an entire lactation period and the estimated yields based on weekly, fortnightly, and three-weekly determinations are small. The total yields, as estimated by fortnightly determinations, were on an average quite close to the actual yields. It can be demonstrated that the differences are mainly due to the variations in yield as the lactation period progresses, and are not to any great extent due to the causes given by Mr Speir. If proper data were provided a corrective factor could be found to bring the estimated nearer to the actual yields. It has also been shown by Gavin that it would be possible to predict with fair accuracy the actual yield for an entire lactation period from the maximum daily yield maintained or exceeded for not less than three entries in the record book.[1]

The prediction would necessarily be closer in the case of the Scottish Milk Records Association, since the numbers of determinations are much greater, and since there is no selection of the quantities such as was made by Gavin.

(*b*) *Collation of Data.*—For the purpose of making a statistical analysis the data bearing on each cow was placed on a separate card. Such cards were prepared for the whole of the printed data for the years 1908 to 1912 inclusive, in all 59,169 cases.

The following table shows the numbers of cows given in the printed records for the five years ending 1912 :—

TABLE I.

Year	Number of Cows. Complete Data.
1908	8,132
1909	9,202
1910	9,514
1911	13,965
1912	18,356
Total	59,169

These records were separated into three classes, namely (*a*) cases where the date of birth of calf at end of milk record had been recorded as well as date of birth of calf at beginning of record; (*b*) cases where record is given over a comparatively complete lactation period, but in which no mention is made of

[1] Gavin, 'Journal of the Royal Agricultural Society of England,' 1912, vol. lxxiii., pp. 153 to 174.

date of birth of second calf; and (*c*) cases of records of lactations which are evidently incomplete.

A report was submitted to the authorities on 14th April 1914 on the work performed on the collated data of the above 59,169 cases.

Instructions were then given to confine the statistical analysis to the records of the years 1911 and 1912, and to those cases where date of birth of calf at end of milk record had been given as well as that of the birth at the beginning of the record. In other words, the analysis was now confined to (*a*) of the years 1911 and 1912. The statistical analysis of cows of Classes I., II., V., and VI. (those contained in the printed records) was first carried out. The written records were then sent on for the collation and transcription to cards of classes III. and IV. A statistical analysis of these classes for the two years was conducted and carried to completion.

The next stage in the investigation was to consider the whole of the records together for 1911 and 1912, irrespective of the above classification of cows according to their yields. The records thus analysed are spoken of as the "complete" data, and the results afford a perspective view of the quality and quantity of milk for the years 1911 and 1912. The relation of yield to date of calving was next considered, and the average yields of cows calving in each month of the year determined. The last stage in the preliminary investigation was the institution of a comparison of the quantities of milk obtained from each of the local societies. A similar comparison was made of the percentages of butter fat obtained from the recorded areas.

The Committee decided to postpone the investigation into the inheritance factors, such as, for instance, the determination of the influence of sire and dam respectively upon lactation. Accordingly, no pedigree data were supplied for analysis. Such data would form a suitable subject for a separate statistical investigation.

(*c*) *Method of Statement of Results.*—In this preliminary Report it is not proposed to explain in detail the methods of analysis employed. These methods, their scientific basis, and the necessary proofs of the results, are given in a separate memoir.[1] It seems desirable, in the first instance, to set forth in the briefest and clearest possible manner the chief results of the inquiry, avoiding, as far as is possible, technical terms which abound in a scientific memoir, and which are necessary for those who seek a scientific proof. This Report is intended to be a plain statement for practical men. Those who desire to follow the statistical analysis in

[1] It has not yet been decided in which scientific journal this memoir will appear. Intimation as to this will be publicly made in the usual way.

every stage and detail can do so in the memoir above referred to. The writer will now proceed to answer the Committee's queries in detail.

(2) *Relationship between Quantity and Quality of Milk. Complete Data for the years* 1911 *and* 1912 *separately.*

The results of analysis of the complete data for the years 1911 and 1912 show that on an average the larger the number of gallons of milk a cow gives between two successive calvings, the less will be the percentage of butter fat present in the milk.

The unit of quantity of milk employed was 50 gallons. For example, all milk yields between 150 and 200 gallons were considered together as one group or type; all between 200 and 250 as another group, the scale thus rising by 50 until the highest yields were reached in the groups 1150 to 1200, and 1200 to 1250 and upwards. In stating the results of this grouping, the middle point of each group was selected to describe the group; thus 175 describes the group 150-200 gallons, while 1225 describes the group 1200-1250 gallons.

The problem before the writer was therefore to ascertain the average percentage of butter fat associated with each of the above-mentioned groups of quantities of milk. The following table (Table II.) shows the average percentages of butter fat found for the various types of quantities for the years 1911 and 1912.

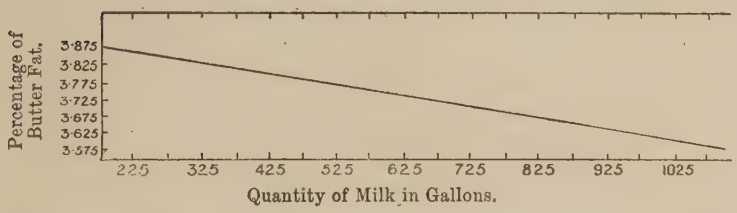
TABLE II.—Table showing Average Percentages of Butter Fat for Types of "Quantity." Complete Data.

"Quantity" Types n Gallons).	Average Percentage of Butter Fat. 1911.	1912.
175	3·88	3·90
225	3·86	3·88
275	3·85	3·86
325	3·83	3 85
375	3·81	3·83
425	3·80	3·81
475	3·78	3·80
525	3·76	3·78
575	3·75	3·76
625	3·73	3·75
675	3·71	3·73
725	3·70	3·72
775	3·68	3·70
825	3·67	3·68
875	3 65	3·67
925	3·63	3·65
975	3·62	3·63
1,025	3·60	3·62
1,075	3·58	3·60
1,125	3·57	3·58
1,175	3·55	3·57
1,225	3·53	3·55

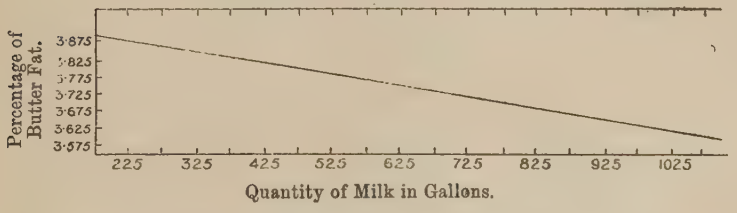
The following diagram (Diagram I.) shows in a graphic manner the results given above. It will be seen that a direct proportional relationship exists between quantity and average quality. Given two known values of average quality for any two types of quantity, a straight line joining the two values of average quality and extended on either side will give the average qualities for all other types of quantity, average quality being represented in value by a straight line proportional to its value standing at right angles to the base line of quantity at a point corresponding to its appropriate type of quantity.

DIAGRAM I.

Relationship between Average Percentage of Butter Fat and Quantity of Milk (1911 Data).



Relationship between Average Percentage of Butter Fat and Quantity of Milk (1912 Data).



(3) *Relationship of Quantity and of Quality of Milk to Age of Cow. Complete Data for the Years* 1911 *and* 1912 *separately.*

(*a*) *Relationship of Quantity of Milk to Age of Cow.*—The data were next examined in order to answer the Committee's second query, which involved the separate consideration of the relationship of quality to age and of quantity to age. It can be seen at once that the duration of the lactation period between two successive calvings of each cow is a factor in determining the actual milk yield. Table III. gives (for the year 1912) the actual yields for each lactation period, and shows that a high yield for a short lactation period is exceptional, and that a low

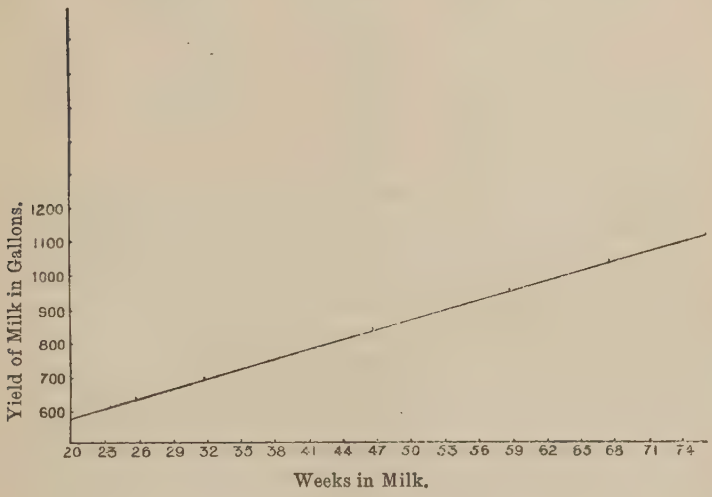
TABLE III.—Complete Data, 1912. Table showing Milk Yield for each Lactation Period Weeks in Milk).

Weeks in Milk.	Quantity of Milk in Gallons.																						
	Up to 200	201 to 250	251 to 300	301 to 350	351 to 400	401 to 450	451 to 500	501 to 550	551 to 600	601 to 650	651 to 700	701 to 750	751 to 800	801 to 850	851 to 900	901 to 950	951 to 1000	1001 to 1050	1051 to 1100	1101 to 1150	1151 to 1200	1201 to 1250	1251 and up.	Total.
7 to 9	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
10 to 12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
13 to 15	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4
16 to 18	5	6	3	6	7	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28
19 to 21	3	4	6	10	9	4	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	40
22 to 24	...	5	17	21	12	8	5	4	1	...	1	1	1	...	...	...	...	...	...	...	...	...	76
25 to 27	...	4	14	18	31	47	32	20	16	6	3	2	2	2	...	...	...	...	...	...	...	...	197
28 to 30	...	2	12	24	45	50	97	69	52	39	19	16	10	7	2	...	...	...	...	...	...	...	444
31 to 33	...	...	2	8	37	83	119	146	126	116	85	43	36	14	11	1	2	2	...	...	...	...	831
34 to 36	...	...	3	10	28	63	128	186	241	225	173	160	95	70	30	14	10	3	2	1	1	...	1443
37 to 39	...	...	...	1	7	31	66	125	189	211	215	185	136	111	45	35	14	16	5	5	1	...	1399
40 to 42	...	..	...	1	1	11	37	56	110	131	148	152	102	101	55	45	26	15	10	11	1	1	2	1016
43 to 45	...	...	...	1	...	4	16	19	45	57	66	67	60	60	41	40	19	24	2	4	4	2	3	534
46 to 48	..	...	...	...	...	...	1	12	17	28	36	32	38	37	22	18	9	18	10	6	5	...	5	294
49 to 51	...	...	...	...	...	...	...	...	7	9	12	16	30	20	20	17	13	4	5	4	3	3	2	165
52 to 54	...	...	...	...	...	...	...	...	...	3	4	9	10	10	9	6	7	2	2	5	2	2	4	75
55 to 57	...	...	...	...	...	...	...	...	...	3	...	5	3	9	3	5	3	5	2	...	...	1	2	41
58 to 60	...	...	...	...	...	...	...	...	...	1	...	...	4	2	2	2	4	...	1	2	1	1	1	21
61 to 63	...	...	...	...	...	...	...	...	...	...	...	...	...	3	3	1	...	...	3	1	...	1	1	13
64 to 66	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	3	...	1	...	1	...	...	1	8
67 to 69	...	...	...	...	...	...	...	..	...	...	...	...	...	...	3	...	1	1	1	...	...	...	3	9
70 to 72	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	2
73 to 75	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
76 to 78	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	2
79 and upwards	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	2	4
Total .	9	25	57	100	177	302	503	637	806	829	762	688	527	448	248	189	108	91	43	40	19	12	28	6648

yield for a long lactation period is also exceptional. Diagram II. shows for the year 1912 the *exact* average relationship between milk yield and duration of the lactation period between two successive calvings. The diagram shows (1) the average yield recorded for the various named lactation periods, and (2) that the average yield rises as the lactation period increases. A full discussion of this problem, therefore, must take into account the number of weeks in milk of each cow. The writer, however, was not directed to take this factor into account, and at this stage he must answer the Committee's query simply and directly as it stands.

DIAGRAM II.

Relationship between Quantity or Yield of Milk (in Gallons) and Lactation Period (Weeks in Milk) (1912 Data).



The following table (Table IV.) gives the average quantity of milk in gallons for the various types of age of cow, irrespective of the duration of the lactation period:—

[Table IV.

TABLE IV.—Average Milk Yield associated with each Age of Cow. Complete Data.

Age of Cow.	Average Quantity of Milk in Gallons.	
	1911.	1912.
2	514·4	534·9
3	559·9	578·5
4	599·7	617·1
5	633·5	651·0
6	661·6	679·9
7	683·7	704·0
8	700·1	723·2
9	710·6	737·5
10	715·2	747·0
11	714·1	751·6
12	707·0	751·3
13	694·2	746·1
14	675·5	736·1
15	650·9	721·2
16	620·5	701·5
17	584·3	676·9
18	542·2	647·4

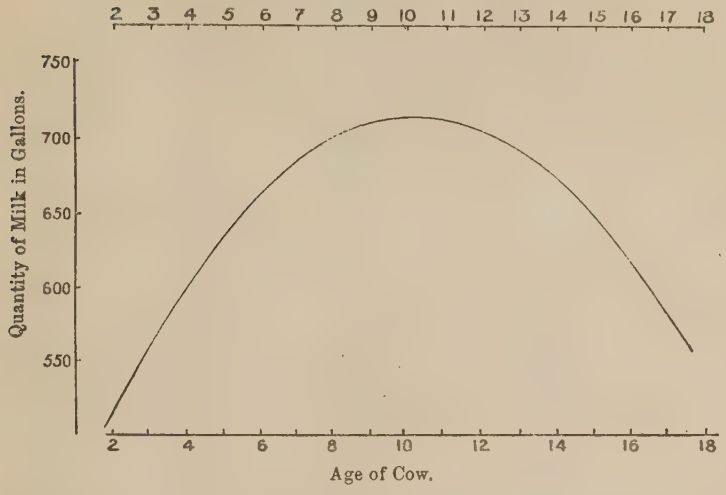
These results are shown graphically in Diagram III. (p. 247).

On inspecting the diagram it will be seen that the law connecting age and average quantity of milk is not quite so simple as that connecting quantity with average percentage of butter fat. The lowest yield of milk is found among heifers and young cows, and the yield gradually increases with age until the cows reach ten years of age. The yield is practically stationary for cows of from ten to twelve years of age. After twelve years of age the yield gradually decreases with increase of age. There is a notable difference between the average yield for each year of age when the years 1911 and 1912 are compared with each other. The yield for 1912 is significantly higher than that for 1911. The law, however, has the same form. The difference between 1911 and 1912 merely shows that a characteristic yield for each separate year is likely to exist.

(*b*) *Relationship of Quality to Age of Cow* (*i.e.*, average percentage of butter fat for each age).—If we consider the average percentage of butter fat associated with every year of age, we find that, in a general way, the average percentage decreases with age until a certain minimum value is reached, after which there is a gradual increase in the average percentage of butter fat. Table V. (p. 248) gives the average percentages associated with each year of age.

DIAGRAM III.

Relationship between Age of Cow and Average Yield of Milk (Gallons) (1911 Data).



Relationship between Age of Cow and Average Yield of Milk (Gallons) (1912 Data).

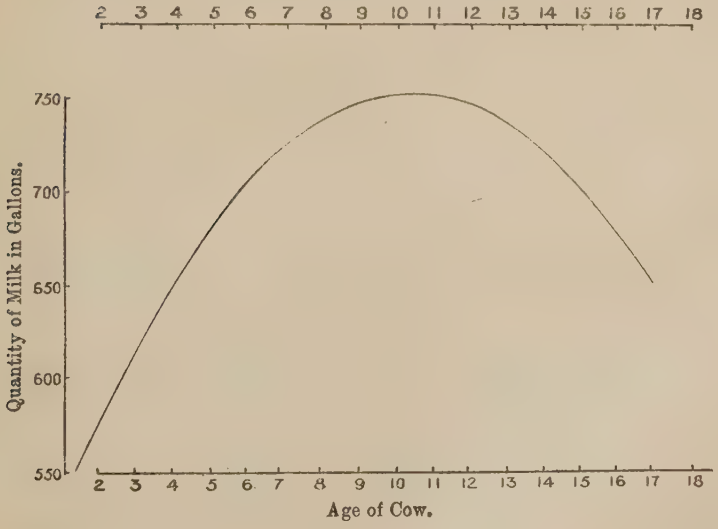


TABLE V.—Relationship between Age of Cow and Average Percentage of Butter Fat during a Lactation Period. Complete Data.

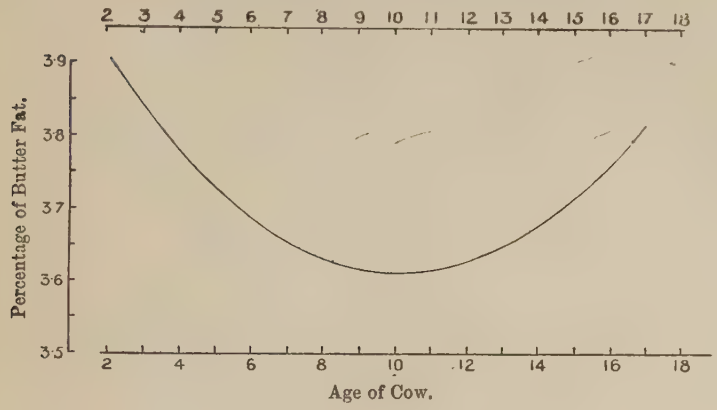
Age of Cow.	Average Percentage of Butter Fat. 1911.	1912.
2	3·91	3·93
3	3·84	3·85
4	3·78	3·79
5	3·73	3·73
6	3·69	3·69
7	3·66	3·66
8	3·63	3·63
9	3·62	3·62
10	3·61	3·61
11	3·61	3·62
12	3·62	3·63
13	3·64	3·66
14	3·67	3·70
15	3·71	3·74
16	3·76	3·80
17	3·81	3·87
18	3·87	3·94

The results are graphically represented on Diagram IV.

[Diagram IV.

DIAGRAM IV.

Relationship between Age of Cow and Average Percentage of Butter Fat during a Lactation Period (1911 Data).



Relationship between Age of Cow and Average Percentage of Butter Fat during a Lactation Period (1912 Data).

(4) *Relation of Quantity and Quality of Milk to date of calving —averages for cows calving in each month of the year.* (Classes I. and II. only for the year 1912.)

(*a*) *Data considered for each Month.*—The relationships of the yield and of the quality of milk to date of calving of each cow showing a complete lactation period, and dates of birth of first and second calves in the 1912 records, are considered in this section.

The following table (Table VI.) shows the average yields of milk of cows calving in each month of the year, the corresponding percentages of butter fat, and the degrees of variation in yield for each month.

TABLE VI.—Date of Calving and Milk Production. Cows of Classes I. and II. Year 1912.

Month.	Number of Cows.	Average Yield (gallons).	Degree of Variation of Yield (gallons).	Degree of Variation of Yield compared with each mean =100.	Average Percentage of Butter Fat.
January . .	376	726	160	22·0	3·80
February . .	651	724	151	20·9	3·81
March . . .	949	727	158	21·7	3·77
April . . .	654	701	175	24·9	3·80
May . . .	275	705	184	26·1	3·76
June . . .	102	691	214	31·0	3·81
July . . .	39	801	242	30·2	3·83
August . .	80	778	159	20·4	3·74
September . .	179	802	187	23·3	3·76
October . .	189	802	165	20·5	3·77
November . .	175	792	171	21·6	3·77
December . .	224	756	156	20 6	3·85

It will be seen that cows calving during the first three months give practically the same yield of milk. There is a distinct fall in yield for cows calving in April, and there is practically a uniform yield for those calving in May and June. A distinct rise in yield takes place for cows calving in July, and this increase is maintained in those calving in August, September, and October. A fall in yield takes place in cows calving in November, and this fall continues until a minimum is reached in cows calving in spring. There is less variation in yield among cows calving during the winter months round the average of these months, when compared with the variations round the mean for the summer months. In other words, the high monthly averages of cows calving during the summer months are accompanied by greater variations round

the averages for these months compared with the variations for the other months. That is to say, we have more poor and more high yields among cows calving during the summer months than during the winter months. If we examine the mean percentages of butter fat found for cows calving in each month of the year successively, we find that the quality of the milk remains practically uniform throughout the year.

(*b*) *Data considered in Four Monthly Periods.* (*Complete Data for the year* 1912.)—After the analysis of yield of milk from cows belonging to Classes I. and II. for different months of calving had been completed, the writer was instructed to carry out an analysis of the complete data grouped for cows calving within three separate four-monthly periods. According to instructions the months were grouped as follows—Group A, December to March inclusive; B, April to July inclusive; and C, August to November inclusive. A very complete analysis was conducted on these groups, the results of which are embodied in the full memoir already referred to. The following table (Table VII.) shows the average values for (1) number of cows observed, (2) yield of milk, (3) percentage of butter fat, (4) age of cow, (5) lactation period, and (6) yield of milk for a constant number of weeks in milk. The cows were divided, as already stated, into three groups according to date of calving. The first group (A) covers cows calving within the four months December to March inclusive; the second group (B) covers cows calving within the four months April to July inclusive; and the third group (C) covers cows calving within the four months August to November inclusive.

TABLE VII.—Table of Average Values for Cows calving in the Three Four-monthly Periods. Complete Data, 1912.

	Character.	Group A.	Group B.	Group C.
1	Number of Cows . . .	3872	1986	790
2	Yield of Milk in Gallons .	658	614	737
3	Percentage of Butter Fat .	3·72	3·77	3·75
4	Age of Cow in years . .	5·87	5·65	4·91
5	Duration of Lactation Period in Weeks	37·86	34·54	42·41
6	Yield of Milk, in Gallons, for the Average Lactation Period of 37·41 Weeks .	650	666	650

These results show that the largest yield of milk is secured from cows calving in the months of August to November inclusive (Group C), while the smallest yield is given by cows calving in the months of April to July inclusive (Group B). There is no significant difference in the percentage of butter fat among cows calving in any of these three four-monthly periods. That is, of course, in accord with the results obtained from the analysis, according to individual months of calving. There is a significant difference in the average age of Group C when compared with the other groups. Cows calving in the months of August to November inclusive are, on an average, younger than the rest. The variations in average yield found in cows calving within the three different periods are variations mainly due to differences in the average duration of the lactation period of each group (see row 5 of Table VII.) If the yields are considered for the average lactation period, it is found that there is no significant difference between any of the three groups.

(5) *Comparison of Districts (covered by Local Milk Record Societies) with respect to Quantity, and Butter Fat Ratio for Cows of Classes I. and II. for the Year* 1911.

An analysis of the records was next carried out in order to ascertain the average quantities of milk in gallons and the corresponding average percentage of butter fat for the cows of Classes I. and II. in each local milk record society.

The following table (Table VIII.) shows the mean values for each district for quantity, percentage of butter fat and age, and also the degree of variation in each case.

TABLE VIII.—Milk Production in Various Districts. Cows of Classes I. and II. Year 1911.

1 District.	2 Mean Quantity of Milk in gallons.	3 Degree of Variation in gallons.	4 Mean Percentage of Butter Fat.	5 Degree of Variation	6 Mean Age of Cow in Years.	7 Degree of Variation.
Central Ayrshire .	738	173	3·86	·25	6·07	3·50
Bute and Lower Renfrew	840	158	3·88	·25	6·62	2·29
Carrick . .	750	159	3·77	·35	6·23	2·93
Cumnock . .	702	144	3·73	·28	6·41	3·40
Dunragit . .	683	146	3·65	·33	5·93	3·12
Fenwick . .	766	185	3·76	·33	4·99	2·77
Lesmahagow .	773	153	3·77	·32	5·57	2·50
Mauchlin . .	724	130	3·78	·29	5·93	2·96
Montgomerie .	757	162	3·87	·37	6·32	2·79
Nithsdale . .	701	142	3·87	·36	5·91	2·95
Upper Renfrew .	725	168	3·48	·31	5·37	2·21
John Speir, M.R.S.	773	147	3·76	·34	6·14	2·61
Stewartry No. 1 .	658	137	3·72	·33	5·73	2·48
Stewartry No. 2 .	694	119	3·72	·24	5·78	2·86
Stewartry No. 3 .	721	129	3·94	·28	5·87	2·74
Stewartry No. 4 .	676	146	3·76	·30	5·26	2·58

These results show, so far as quantity is concerned, the following order with regard to districts:—

TABLE IX.—Districts arranged according to Milk Yield. Cows of Classes I. and II. Year 1911.

District.	Mean Quantity of Milk in Gallons.
Bute and Lower Renfrew	840
Lesmahagow	773
John Speir	773
Fenwick	766
Montgomerie	757
Carrick	750
Central Ayrshire	738
Upper Renfrew	725
Mauchline	724
Stewartry No. 3	721
Cumnock	702
Nithsdale	701
Stewartry No. 2	694
Dunragit	683
Stewartry No. 4	676
Stewartry No. 1	658

Bute and Lower Renfrew district is easily first, then follow Lesmahagow and John Speir. The lower yields are found in the Dunragit district and in Stewartry Nos. 1 and 4. A comparison of these results with the nature of the feeding and with the districts which are cheese-producing and milk-producing is given in the memoir approaching completion. The districts giving the highest average percentages of butter fat are Stewarty No. 3, Bute and Lower Renfrew, Montgomerie, and Nithsdale, while the lowest average percentage is found in Upper Renfrew.

The following table (Table X.) shows the districts arranged in descending order of average percentage of butter fat from the highest to the lowest. It is interesting to note that significant differences exist between the average ages of cows belonging to different districts (see Column 6 of Table VIII.). The average age is highest in Bute and Lower Renfrew (6·62 years), and is lowest in the Fenwick district (4·99 years).

TABLE X.—Districts arranged according to Average Percentage of Butter Fat. Cows of Classes I. and II., Year 1911.

District.	Mean Percentage of Butter Fat.
Stewartry No. 3	3·94
Bute and Lower Renfrew	3·88
Montgomerie	3·87
Nithsdale	3·87
Central Ayrshire	3·86
Mauchline	3·78
Lesmahagow	3·77
Carrick	3·77
John Spelr	3·76
Stewartry No. 4	3·76
Fenwick	3·76
Cumnock	3·73
Stewartry No. 2	3·72
Stewartry No. 1	3·72
Dunragit	3·65
Upper Renfrew	3·48

A study of the total amount of butter fat yielded by each cow during the years 1911 and 1912 is included in the complete memoir, as also is a study of the variation in the length of the lactation period as measured by the number of weeks in milk.

(6) *Average Yields and Average Values generally.*

It is important to know the general average yield of milk for any particular year as against the particular average yields for various ages, various seasons, and various lactation periods. The average yield of milk for 1911 was 634·36 gallons, with an average percentage of butter fat of 3·73, an average lactation period of 36·79 weeks, an average yield of total butter fat of 236·13 pounds, and an average age of cow of 5·81 years. The corresponding figures for 1912 are—(1) Yield, 654·20 gallons; (2) percentage of butter fat, 3·74; (3) lactation period, 37·41 weeks; (4) yield of total butter fat, 243·77 pounds; and (5) age of cow, 5·69 years.

The following table (Table XI.) shows these results in tabular form:—

TABLE XI.—Means of Various Characters. Complete Data.

	1911.	1912.
Quantity of milk (gallons)	634	654
Age of cow (years)	5·81	5·69
Percentage of butter fat	3·73	3·74
Weeks in milk	36·79	37·41
Yield of butter (pounds)	236	244

(7) *The relative number of Cows giving Various Specified Yields.*

From the point of view of the dairy farmer it is important to know the relative number of cows which give certain specified yields of milk. It is also useful to know the relative number which give less milk than a specified quantity. For example, the question may be put: What number of cows relative to the whole number give a yield of milk varying from 500 to 550 gallons? For 1911 the number was 11·1 per cent of the whole number of cows; for 1912 the corresponding number was 9·9 per cent. Again, the query might be put: What is the relative number of cows yielding (1) less than 500 gallons, (2) less than 550 gallons, (3) less than 600 gallons, or (4) less than 650 gallons? For 1911 the number yielding less than 500 gallons was 19·6 per cent; for 1912, 18·1 per cent. The number yielding less than 550 gallons was for 1911, 30·8 per cent; and for 1912, 28·0 per cent. The number yielding less than 600 gallons was for 1911, 43·8 per cent; and for 1912, 39·5 per cent. Finally, the number yielding less than 650 gallons was for 1911, 56·9 per cent; and for 1912, 51·6 per cent.

Generally speaking, about 50 per cent of the whole number of selected Ayrshire cows on an average give less than 600 gallons of milk within a lactation period, and 50 per cent give more than 600 gallons. Practically all cows (98 per cent) give less than 1000 gallons, and only 2 per cent give on an average over 1000 gallons of milk within a lactation period between two successive calvings.

The following table (Table XII.) shows the relative number for each type of quantity, and the relative number of cows yielding less than the various specified quantities:—

[Table XII.

TABLE XII.—Relative Numbers of Cows giving Various Specified Yields of Milk. Complete Data.

Range of Quantity in Gallons.	Type of Quantity.	Percentage of Cows yielding the specified Quantities of column 2.		Percentage of Cows yielding Milk up to and including the specified Quantities of column 2.	
		1911.	1912.	1911.	1912.
150- 200	175	·04	·12	·04	·12
200- 250	225	·14	·26	·18	·38
250- 300	275	·50	·68	·67	1·06
300- 350	325	1·38	1·52	2·06	2·58
350- 400	375	3·01	2·97	5·06	5·55
400- 450	425	5·75	5·05	10·82	10·61
450- 500	475	8·82	7·52	19·64	18·13
500- 550	525	11·12	9·86	30·76	27·99
550- 600	575	13·04	11·51	43·80	39·50
600- 650	625	13·06	12·07	56·86	51·56
650- 700	675	11·75	11·49	68·61	63·06
700- 750	725	9·65	10·05	78·27	73·10
750- 800	775	7·34	8·14	85·61	81·24
800- 850	825	5·24	6·18	90·85	87·42
850- 900	875	3·52	4·43	94·37	91·85
900- 950	925	2·27	3·03	96·63	94·88
950-1000	975	1·40	1·98	98·04	96·86
1000-1050	1025	·84	1·25	98·88	98·12
1050-1100	1075	·49	·77	99·37	98·99
1100-1150	1125	·28	·46	99·65	99·36
1150-1200	1175	·16	·27	99·81	99·62
1200-1250	1225	·08	·16	99·89	99·78
1250-1300	1275	·05	·09	99·94	99·87
1300-1350	1325	·03	·05	99·96	99·92
1350-1400 and upwards	1375 and upwards	·03	·08	100·00	100·00

ANALYSES FOR MEMBERS DURING 1918.

By Dr J. F. TOCHER, Aberdeen, Analyst to the Society.

THE number of samples analysed by me during 1918 was 136, of which 53 were samples of fertilisers and 41 samples of feeding-stuffs. There were 19 samples of waters, 10 samples of soils, and 13 miscellaneous samples. The following table shows the numbers and nature of the samples analysed during the last six years:—

	1918.	1917.	1916.	1915.	1914.	1913.
Fertilisers . . .	53	58	47	36	48	46
Feeding-stuffs . .	41	36	34	28	28	25
Waters	19	12	22	26	44	27
Miscellaneous . .	23	46	41	51	22	19
	136	152	144	141	142	117

FERTILISERS.

General.—Most of the fertilisers examined were compound fertilisers, such as turnip manures, potato manures, grain manures, and grass manures. Of the six potato manures examined three contained potash. The first sample contained only ·33 per cent; the other two contained 2 per cent and 2·47 per cent respectively. The average composition of the potato manure for this season was represented by one containing 5·1 per cent of nitrogen, 14·8 soluble phosphate, 2·9 per cent citric soluble phosphate, and 2 per cent insoluble phosphate—19·7 total phosphates—and 1·5 per cent potash. The proportion of soluble phosphate is considerably higher than the proportions found during the past two years. The proportions both of nitrogen and potash are distinctly less than the proportions of these constituents found last year. The turnip manures contained about 3·8 per cent nitrogen, 20 per cent soluble phosphate, 4 per cent citric soluble phosphate, 25·8 per cent total phosphate. The average value of potato manures was £10, 17s. per ton, while the average value of turnip manures was £9, 8s. per ton. Only one sample of steamed bone-flour was examined. This is quite natural, as there is a very limited supply of bone-meal and other bone fertilisers. The sample analysed contained ·9 per cent nitrogen and 61·3 per cent insoluble phosphate, which is near the average composition of a steamed bone-flour. Four slags were analysed, three of which contained approximately 25 per cent citric soluble phosphate

and were finely ground. The other sample was a sample of very poor slag, containing only 6 per cent of citric soluble phosphate and 24 per cent of total phosphate. The guarantee in this case was 22 per cent citric soluble phosphate. Since the seller guaranteed this slag to contain 22 per cent of citric soluble phosphate, I reported that the sample was grossly deficient in this fertilising constituent. The samples of superphosphate examined were found to contain 30 per cent soluble phosphate. The grain and grass manures analysed were fairly high in nitrogen, and were otherwise excellent fertilisers for the special requirements of the farmer.

Peat and Peat Fertilisers.—A sample of peat was examined and found to contain ·7 per cent of nitrogen and small traces of other fertilising constituents. The value of peat as a soil enricher cannot be fully measured in a chemical laboratory. All that the analyst can do is to state the proportions of nitrogen, potash, and other fertilising constituents. The advantages of peat mixed with dung and soil as a compost have often been discussed, but no proper estimate has yet been made of the value of peat as a dressing on poor sandy soils deficient in humus. If, however, peat is used as a dressing with the idea that it contains fairly high proportions of the usual fertilising constituents, such a view is erroneous. It would require a dressing of a ton and a half of peat per acre to secure the same amount of nitrogen as could be obtained by a dressing of 1 cwt. of sulphate of ammonia per acre, and the peat dressing would labour under the disadvantage of containing nitrogenous substances which are slow-acting when compared with the quick-acting sulphate of ammonia.

A sample of a peat fertiliser was examined and was found to contain 1 per cent of added potash, 1·2 per cent of added phosphate, and 1 per cent of added nitrogen. In this case 11½ tons weight of the peat fertiliser was equal to 1 ton of sulphate of ammonia in nitrogen content. An application of 50 tons of the peat fertiliser would have to be made to produce the same effect as one ton of mineral phosphate. The sample was found to contain a small quantity of alcohol due to the action of yeast on saccharine substances evidently added to the compound. This fertiliser may be of use in garden or pot experiments. Its practical value as a seed germinator and young plant supporter in the case of grain or turnip crops would have to be proved by experiment.

Feeding-Stuffs.

Among the samples of feeding-stuffs examined were several samples of palm kernel cake, sugar residue, hop residue, dried grains, blood-meal, parings, and silo mixtures. The sample of

hop residue was found to contain 95 food units. It was reported as being suitable as a feeding-stuff when mixed with bran and similar offals in proper proportions. The samples of sugar residue contained about 12 per cent of oil, 12 per cent of albuminoids, and 28 per cent carbohydrates, and were favourably reported upon.

The samples of blood-meal examined contained over 80 per cent albuminoids. The food value of blood-meal is higher than that of any other feeding-stuff. It contains, on an average, about 210 food units, and, since the market price at the present time is about £45 per ton, it costs about 4s. 3d. per food unit. Blood-meal is an excellent feeding-stuff, and is particularly suitable to be used in a mixture as a calf meal, on account of its being very easily digested and on account of its palatability and agreeable flavour. It should prove very useful as an ingredient of compound cakes for this reason; but since the price of compound cakes is controlled, thus limiting the proportions of oil and albuminoids in these cakes, the use of blood-meal in a compound cake would result in a distinct loss to the manufacturer.

Soils.

Of the ten soils examined, one was found to contain only ·006 per cent of available phosphoric acid, and thus was a soil in immediate need of phosphatic fertilisers. The other soils were found to be relatively acid soils. Advice was required as to the best artificial manures to be used, in the first case, for a turnip crop, and, in the other case, for a clover crop. The use of high-grade basic slag was recommended for the turnip crop, as the slag would supply the requisite amount of alkalinity necessary to correct the soil as well as the required amount of phosphates. For the clover crop a top dressing of lime was recommended to be applied in the early spring. An autumn dressing of basic slag to the extent of 4 cwt. was also recommended. In connection with soil analyses it may be of interest to mention that, in addition to the mechanical and ordinary chemical analyses hitherto carried out, analysts also consider the live content of the soil and what is called the "lime requirement." The lime requirement is not a measure of the deficiency of lime in a soil, but really is a measure of its relative acidity. An excellent method of estimating the lime requirements of soils was recently devised by scientific workers at Rothamsted, and enables an agricultural analyst to measure accurately the amount of alkaline material necessary to add to a soil to bring it to a neutral or sweet and healthy condition necessary for plant growth. The determination of the lime requirement of a soil is as important, if not more important,

than the determination of phosphates, potash, and other mineral constituents of the soil. In cases of gross infertility an examination of the soil flora and fauna are also essential.

Miscellaneous Samples.

Among the miscellaneous samples were samples of bracken, sugar substitute, beet sugar, home-made jams, and veterinary medicines, which call for no special comment.

Examinations for Poisons.

Samples of maize-meal, mixed cakes, and beans were examined for poisonous or injurious substances, because these were used as feeding-stuffs in the case of illness and death of several cows. The maize-meal and bean-meal were found to be of good quality and free from poisonous substances. A sample of mixed cake was found to be rancid, and capable of producing gastric disturbance among cows. In order that the information necessary to determine causes of death among live stock should be promptly supplied in every case of suspected poisoning, I propose in future to send a schedule of queries for the member to fill up, so that each investigation may be as thorough as possible, and the actual cause of illness or death promptly and accurately determined. It is desirable in all cases that any sample of bowel contents or of feeding-stuffs should be accompanied by a full statement in each case of the nature of the feeding prior to illness and all ascertainable facts about the illness. If an analyst is left in complete ignorance of the facts, he has to make a much more extended and costly analysis than he would otherwise have to make if he knew that poisoning by certain compounds was quite excluded from the case. Sometimes only a part of the alimentary canal is supplied, as in a recent case of the death of a lamb. Only the intestine was sent in this case. Possibly the lamb died of woolball; but that is only conjecture, as the contents of the small and large intestines were quite normal. A sample of Egyptian cotton-cake was sent for analysis, because six calves about six months old died after being fed on the cake as part of the ration. I reported that the cotton-cake was quite normal in character, was of good quality, and free from extraneous poisonous substances. As I pointed out to members of the Society in 1915, decorticated cotton-cake should never be fed to calves or pigs, as, if so, illness or death is sure to result. The poisonous action of cotton seed has been shown to be due to the presence of a small proportion of a toxic poison which has a rapid and fatal effect on calves and pigs.

MILK RECORDS.

Sixteenth Year—Records of 17,827 Cows.

By WILLIAM STEVENSON, B.Sc., N.D.A., N.D.D., Superintendent of Milk Records to the Scottish Milk Records Association.

Systematic Milk Recording in Scotland was continued in 1918 on the same lines as in 1917 and previous years. The work was carried on under the direction of The Scottish Milk Records Association as formerly.

The Association in 1918 consisted of the following members:—

Name and Address.	Body Represented.
Mr W. L. Ferguson, Catlins, Lockerbie	Annandale Milk Record Society.
Major W. T. R. Houldsworth, Kirkbride, Maybole	Ayr and Stair Milk Record Society.
Mr John Young, Skerrington Mains, Hurlford	Central Ayrshire No. 1 Milk Record Society.
Mr D. Wardrop, Knockterra, Cumnock	Cumnock Milk Record Society.
Mr Robert Howie, Drumfork, Helensburgh	Dumbartonshire Milk Record Society.
Mr James Osborne, Ryemuir, Lochmaben	Dumfries and Nithsdale Milk Record Society (Lower Branch).
Mr James Murray, Kirkland, Thornhill	Dumfries and Nithsdale Milk Record Society (Upper Branch).
Mr John Murray, Kilfillan, Glenluce	Dunragit Milk Record Society.
Mr A. W. Ness, Gardrum Mill, Fenwick	High Fenwick Milk Record Society.
Mr J. W. Miller, Earlseat, West Wemyss	Fife Milk Record Society.

Name and Address.	Body Represented.
Mr John Finnie, Camphill, Dalry	"John Speir" Milk Record Society.
Mr John M'Caig, Belmont, Stranraer	Kirkcolm and Leswalt Milk Record Society.
Mr Gavin Hamilton, British Linen Bank, Lesmahagow	Lesmahagow Milk Record Society.
Mr Alex. Edgar, Chapelheron, Whithorn	Lower Wigtownshire Milk Record Society.
Mr Alex. Wyllie, Mossgiel, Mauchline	Mauchline and Coylton Milk Record Society.
Mr Thomas Barr, Hobsland, Monkton	Monkton and District Milk Record Society.
Mr David Goldie, Little Shewalton, Irvine	Montgomerie Milk Record Society.
Mr James Ferguson, Auchinbay, Ochiltree	Ochiltree Milk Record Society.
Mr James Hamilton, Headhouse, East Kilbride	Renfrewshire (Upper Ward) Milk Record Society.
Brig.-General J. A. Houison-Craufurd, Dunlop House, Dunlop	Stewarton and Dunlop Milk Record Society.
Mr H. W. B. Crawford, of Chapmanton, Castle-Douglas	Stewartry of Kirkcudbright Milk Record Society, Circuit No. 1.
Mr W. P. Gilmour, Balmangan, Kirkcudbright	Stewartry of Kirkcudbright Milk Record Society, Circuit No. 2.
Sir Thomas Clement, K.B.E., of Netherton, 64 Albion Street, Glasgow Mr James Howie, Hillhouse, Kilmarnock Mr Thomas C. Lindsay, Aitkenbrae, Monkton Mr A. W. Montgomerie, Lessnessock, Ochiltree	The Ayrshire Cattle Herd-Book Society.
Mr Matthew Bowie, Blackbyres, Barrhead, near Glasgow Mr Hugh Brown, Colton Mains, Dunfermline	The British Holstein-Friesian Cattle Society.
Mr F. N. M. Gourlay, of Milnton, Tynron, Thornhill Mr R. W. R. Mackenzie, of Earlshall, Leuchars, Fife	The Shetland Cattle Herd-Book Society.

Name and Address.	Body Represented.
Mr Alex. Cross, of Knockdon, 19 Hope Street, Glasgow Mr John M'Caig, Belmont, Stranraer Sir Hugh Shaw Stewart, Bart., C.B., of Ardgowan, Inverkip	The Highland and Agricultural Society.
Mr Charles M. Douglas, C.B., D.Sc., of Auchlochan, Lesmahagow Principal W. G. R. Paterson, 6 Blythswood Square, Glasgow	The West of Scotland Agricultural College.
Mr Wm. Bruce, B.Sc., 13 George Square, Edinburgh Mr Alex. M'Callum, M.A., LL.B., 13 George Square, Edinburgh	The Edinburgh and East of Scotland College of Agriculture.
Mr G. G. Esslemont, C.B., B.Sc., 41½ Union Street, Aberdeen Professor Hendrick, Marischal College, Aberdeen Mr J. F. Tocher, D.Sc., 41½ Union Street, Aberdeen	The North of Scotland College of Agriculture.
Mr Andrew Clement, Netherton, Newton Mearns Mr Robert Dickie, of Messrs J. & W. Wallace, 498 Gallowgate, Glasgow Mr John Drysdale, 5 St Andrew Square, Edinburgh Mr James Dunlop, Board of Agriculture for Scotland, Edinburgh	Co-opted Members.

Chairman—Mr A. W. Montgomerie.

The following are the principal members of the staff:—

Secretary and Treasurer—Mr John Howie.
Superintendent—Mr William Stevenson, B.Sc.. N.D.A., N.D.D.
Assistant-Superintendent—Mr A. C. Campbell, N.D.A., C.D.A.

Administration.

In 1918, as in previous years, the Association's milk recording was administered through Local Milk Record Societies. In view of the urgent need for economy in expenditure from public funds, the grant for milk recording from the Develop-

ment Fund of not more than £2000, obtained through the Board of Agriculture for Scotland in 1914, was restricted in 1918, as in the two previous years, to £1250, the conditions attached to the grant being the same as formerly.

The Ayrshire Cattle Herd-Book Society continued their grant of £50 to the Association.

Grants were allocated to local societies on the following scale:—

(a) To societies in their First Year.—An annual grant of £35, and the hire of the necessary milk-testing appliances free of annual charge; the society to upkeep the apparatus in good condition.

(b) To societies in their Second Year.—An annual grant of £35.

A full grant to be given for tests at intervals of not more than 21 days; 75 per cent thereof for tests at intervals of from 21 to 28 days; no grants to be given where the intervals between the tests exceed 28 days.

(c) To societies in their Third or Fourth Year.—An annual grant of £10.

Owing to the resignation of members at the end of 1917, and to the fact that few new members could be obtained, and from other causes due to the continuance of the war, two local societies were unable to continue as separate societies in 1918: though in both cases it was hoped that milk recording would be resumed on the same scale as formerly after the war. For the same reasons no new milk record societies were formed in 1918.

The total number of milk record societies or branch societies affiliated with the Association in 1918 was 22, and 22 trained recorders were constantly employed during the greater part of the year, compared with 24 in 1917. The total number of herds tested in 1918 was 426, compared with 468 in 1917. The total number of cows tested in 1918 was 17,827, compared with 19,564 in the previous year.

The following is a list of the Milk Record Societies which operated in 1918, with the name and address of the secretary of each society:—

Name of the Society.	Secretary.
Annandale . .	Mr Thomas Henderson, Solicitor, Lockerbie.
Ayr and Stair . .	Mr Quintin Dunlop, Greenan, Ayr.

Name of the Society.	Secretary.
Central Ayrshire No. 1	Mr James Howie, Hillhouse, Kilmarnock.
Cumnock . . .	Mr Alex. Arthur, Benston, New Cumnock.
Dumbartonshire .	Mr John Bilsland, Quay Place, Dumbarton.
Dumfries and Nithsdale (Lower Branch)	Mr Thomas Henderson, Solicitor, Lockerbie.
Dumfries and Nithsdale (Upper Branch)	Mr Thomas Henderson, Solicitor, Lockerbie.
Dunragit . . .	Mr John H. Wyllie, The United Creameries, Dunragit.
Fenwick (High) .	Mr James Mather, Low Gainford, Fenwick.
Fife . . .	Mr Wm. Macniven, Royal Bank, Kirkcaldy.
"John Speir" . .	Mr William Longwill, Hawhill, Dalry.
Kirkcolm and Leswalt	Mr John M'Caig, Belmont, Stranraer.
Lesmahagow . .	Mr Gavin Hamilton, British Linen Bank, Lesmahagow.
Lower Wigtownshire .	Mr William Christison, Barglass, Kirkinner.
Mauchline and Coylton	Mr Wm. Wallace, Auchenbrain, Mauchline.
Monkton and District	Mr William Howie, Brieryside, Monkton.
Montgomerie . .	Mr David Goldie, Little Shewalton, Irvine.
Ochiltree . . .	Mr A. W. Montgomerie, Lessnessock, Ochiltree.
Renfrewshire (Upper Ward)	Mr J. Campbell Murray, 120 West Regent Street, Glasgow.
Stewarton and Dunlop	Mr John Littlejohn, Buistonend, Kilmaurs.
Stewartry of Kirkcudbright, Circuit No. 1	Mr Patrick Gifford, Solicitor, Castle-Douglas.
Stewartry of Kirkcudbright, Circuit No. 2	Mr Patrick Gifford, Solicitor, Castle-Douglas.

Season 1918.

The following table shows for each Society the number of members, the number of cows tested, the interval between the tests, and the duration of the recording season:—

Name of the Society.	No. of Members.	Number of Cows Tested.	Interval between Tests, in days.	Duration of Recording Season, in weeks.
1. Annandale . . .	23	975	27	52
2. Ayr and Stair . . .	22	993	25	52
3. Central Ayrshire, No. 1 .	17	586	21	52
4. Cumnock	18	610	21	52
5. Dumbartonshire . .	15	556	18	52
6. Dumfries and Nithsdale (Lower)	19	763	22	52
7. Dumfries and Nithsdale (Upper)	21	901	24	52
8. Dunragit	17	1157	22	48
9. Fenwick (High) . .	21	754	26	52
10. Fife	16	611	20	52
11. "John Speir" . . .	24	588	28	52
12. Kirkcolm and Leswalt .	19	1117	22	45
13. Lesmahagow . . .	22	602	28	52
14. Lower Wigtownshire . .	22	1240	28	47
15. Mauchline and Coylton .	19	709	22	52
16. Monkton and District .	18	735	21	52
17. Montgomerie . . .	21	674	28	52
18. Ochiltree	18	533	21	52
19. Renfrewshire (Upper Ward)	16	653	20	52
20. Stewarton and Dunlop .	21	743	22	52
21. Stewartry, No. 1 . .	17	1031	22	52
22. Stewartry, No. 2 . .	20	1296	22	52
Total No. .	426	17,827		

Definitions.

The milk records compiled by the Association are records of the estimated quantity of milk produced by each cow in a separate lactation, and of the estimated percentage of milk-fat contained in the milk. For convenience a gallon of milk is reckoned as 10 lbs. A gallon of milk of average quality weighs almost exactly 10⅓ lbs. The following further particulars concerning each record are also given, wherever possible:—

Name of cow, byre number, and herd-book number.
Sire of cow, and herd-book number of sire.
Dam of cow, and herd-book number of dam.

Date of birth.
Date of calving preceding opening of record.
Number of weeks in milk.
Date of next calving after record closed.

The following particulars of *the preceding record* are appended to each record, where available :—

Date of calving preceding opening of record.
Quantity of milk in gallons.
Percentage of fat in milk.
Number of weeks in milk.

The milk yields were estimated in respect of quantity and milk-fat percentage from the results of systematic periodic tests by trained recorders. The recorders visited the farms for this purpose at intervals varying from 14 to not more than 28 days, and each day of visit was regarded as the middle day of the period covered by the visit. Milk records estimated in this way approximate closely to the actual milk yields.

Classification of Records.

The records were classified into three groups for cows and heifers respectively, on the same basis as in the last eight reports. Experience has confirmed the view that a very useful comparison is obtained by reckoning the yields at their estimated equivalent in milk of 1 per cent of milk-fat. Such a comparison takes into consideration both the quantity and quality of the milk.

Cows with a milk record equivalent to not less than 2500 gallons at 1 per cent of fat, and heifers with a milk record equivalent to not less than 2000 gallons at 1 per cent of fat, were grouped into Class I. Cows and heifers with milk records of less than two-thirds of these amounts—*i.e.*, 1660 and 1330 gallons respectively—were grouped into Class III.

The following short table shows the corresponding values of these yields in fairly good milk of 3·5 per cent milk-fat :—

Class.	Yield in Milk of 1 Per Cent Fat. (Gallons.)	Corresponding Yield in Milk of 3·5 Per Cent Fat. (Gallons.)
Cows in Class I. .	Not less than 2500	714
Heifers in Class I. .	Not less than 2000	571
Cows in Class III. .	Less than 1660	474
Heifers in Class III.	Less than 1330	380

All cows and heifers with milk yields falling between these limits would come into Class II. Such animals naturally claim less attention than the good milkers or the obviously unprofitable animals. In order to economise space, particulars of their records are not included in this report. It should be noted, however, that Class II. would have included a certain number of unclassifiable yields, as there were a number of instances where, from various causes, the results of a whole normal lactation could not be obtained.

It should always be kept in mind, when making a comparison of cows in different herds or in different districts, that the different conditions of soil and climate and the different methods of dairying practised have a considerable influence on the milk yields, and that therefore milk yields alone do not necessarily indicate the true relative inherent or hereditary milking qualities of the animals. But the authenticated milk records compiled by the Association ought to be of inestimable value to breeders and owners of dairy cows if properly interpreted.

Milk Record Societies approved by The Scottish Milk Records Association in 1918.

Annandale Milk Record Society.

This society was in its seventh year, and consisted of 23 members, as in the six previous years—the maximum number that could be conveniently served by one recorder on a 27 days circuit. The number of cows tested was 975, an increase of 32 from 1917.

On some of the farms in this district milk is produced for direct sale, and cows calve at all seasons of the year. On other farms cheese is made during the summer months, and most of the cows calve in spring.

Recording was carried on throughout the whole year, the recorder visiting each farm at intervals of 27 days. One advantage of 27 as compared with 28 days' tests is that each member has the visit of the recorder on a different day of the week on each round.

Of the 975 cows and heifers tested by this society, 494 cows and 265 heifers were included in Class I., and 12 cows and 6 heifers in Class III. Thus, of the total cows and heifers tested, 78 per cent were placed in Class I. and 2 per cent in Class III.

Ayr and Stair Milk Record Society.

This society was in its fourth year. The number of members in 1918 was 22, one less than in 1917. The number of cows tested was 993 compared with 996 in the previous year.

The members of this society were widely scattered from near Ayr to beyond Ballantrae. On many of the farms cheese is made during the spring and summer months, and the majority of the cows calve in spring; but on most of the farms nearer to railway stations milk is produced for direct sale, and a considerable proportion of the cows calve in autumn or winter.

Recording was carried on throughout the whole year. The recorder visited each farm at intervals of 25 days.

Of the 993 cows and heifers tested by this society, 344 cows and 137 heifers were included in Class I., and 40 cows and 11 heifers in Class III. Of the total cows and heifers tested, 48 per cent were placed in Class I. and 5 per cent in Class III.

Central Ayrshire No. 1 Milk Record Society.

(Kilmarnock, Hurlford, Galston, and Newmilns Districts.)

This society was in its eleventh year. The 18 original members in 1908 were widely scattered from near Ayr to beyond Kilmarnock, but since 1913, owing to the formation of other two societies in Central Ayrshire, the No. 1 Society has been confined chiefly to the district north-east of Kilmarnock and to the Hurlford, Galston, and Newmilns districts. The number of members in 1918 was 17, one less than in the previous year. The number of cows tested was 586, a decrease of 38 from 1917.

On most of the farms milk is produced for direct sale, but in a few cases cheese is made during the summer months. On the majority of the farms cows are calving at all periods of the year.

Recording was carried on throughout the whole year. The recorder visited each farm at intervals of 21 days.

Of the 586 cows and heifers tested by this society, 254 cows and 63 heifers were included in Class I., and 30 cows but no heifers in Class III. Thus, of the total cows and heifers tested, 53 per cent were placed in Class I. and 5 per cent in Class III.

Cumnock Milk Record Society.

The Cumnock Society is one of the two milk record societies in Scotland which have operated continuously since 1905, and have completed fourteen years of recording, though some of the members of the original Cumnock Society are now members of other societies, while new members in the more immediate neighbourhood have come in. The number of members in 1918 was 18, one more than in the previous year. The number of cows tested was 610, practically the same number as in 1917.

The majority of the cows in this district calve in the early spring, and cheese-making is general during the summer season. On some of the farms milk is sold during the autumn and winter months, and a number of the cows calve towards the end of the year.

Recording was continued throughout the whole year. The recorder visited each farm at intervals of 21 days.

Of the 610 cows and heifers tested by this society, 214 cows and 91 heifers were included in Class I., and 11 cows and 2 heifers in Class III. Thus, of the total cows and heifers tested, 50 per cent were placed in Class I. and 2 per cent in Class III.

Dumbartonshire Milk Record Society.

This society was in its sixth year. The number of members in 1918 was 15, a decrease of one member from 1917. The number of cows tested was 556, a decrease of 39 from the previous year.

In this district milk is sold all the year round, and cows calve at all seasons.

Recording was carried on during the whole year. The recorder visited each farm at intervals of 18 days.

Of the 556 cows and heifers tested by this society, 174 cows and 85 heifers were included in Class I., and 34 cows and 6 heifers in Class III. Thus, of the total cows and heifers tested, 47 per cent were placed in Class I. and 7 per cent in Class III.

Dumfries and Nithsdale Milk Record Society.

Previous to 1917 there were three separate local milk recording societies in Dumfriesshire—Annandale, Dumfries and district, and Nithsdale. The members of each of these societies were rather widely scattered over the county, and there was found to be considerable overlapping of the circuits of the three recorders, entailing a good deal of unnecessary travelling. A joint-meeting of members of the three societies was held at the end of 1916, with a view to forming one milk record society for Dumfriesshire, employing three recorders, and effecting a convenient rearrangement of the circuits. The Annandale Society, however, while agreeing to a rearrangement of members in order to avoid overlapping, decided to continue as a separate society. The remaining two societies agreed to form a joint-society with two branches, to be known as the Upper Branch and Lower Branch respectively.

Dumfries and Nithsdale (Lower) Milk Record Society.

This branch society was in its fourth year. The members were situated chiefly in the Closeburn, Dumfries, Lochmaben, and Lockerbie districts of Dumfriesshire. The number of members was 19, the same number as in the previous year. The number of cows tested was 763, practically the same number as in 1917.

Most of the members of this society make cheese during the summer season, and the majority of the cows calve in spring. On some of the farms milk is produced for direct sale all the year round, and cows calve at all seasons.

Recording was carried on throughout the whole year. The recorder visited each farm at intervals of 22 days.

Of the 763 cows and heifers tested by this society, 236 cows and 95 heifers were included in Class I., and 73 cows and 10 heifers in Class III. Of the total cows and heifers tested, 43 per cent were placed in Class I. and 11 per cent in Class III.

Dumfries and Nithsdale (Upper) Milk Record Society.

The members of this branch society were situated chiefly in the Sanquhar and Thornhill districts of Dumfriesshire. It is one of the oldest milk record societies in Scotland. The Nithsdale dairy farmers commenced milk recording in 1903, the year of the introduction of systematic milk recording into Scotland, but ceased recording for the next two years. The present society was formed in 1906, and in 1918 was in its thirteenth year. The number of members in 1918 was 21, one more than in the previous year. One of the herds was very large, and required two days' testing on each visit. The number of cows tested was 901, practically the same number as in 1917.

Most of the members of this society make cheese during the summer months, and some of the farmers send milk to town in autumn and winter. The majority of the cows calve in the spring months.

Recording was carried on throughout the whole year. The recorder visited each farm at intervals of 24 days.

Of the 901 cows and heifers tested by this society, 269 cows and 131 heifers were included in Class I., and 65 cows and 11 heifers in Class III. Thus, of the total cows and heifers tested, 44 per cent were placed in Class I. and 8 per cent in Class III.

Dunragit Milk Record Society.

This society was inaugurated in 1908 and was in its eleventh year, though only four of the original members in 1908 were to be found in the same society in 1918. The number of members in 1918 was 17, an increase of one from the previous year, and two more than the full membership of the society, as three of the herds required two days' testing on each visit. The number of cows tested was 1157, an increase of 63 from the previous year.

The district is mainly a cheese-making one, and the great majority of the cows calve in early spring, though on some of the farms a proportion calve in autumn or winter.

Recording commenced on 22nd January and continued till 5th December, the records for each herd covering a period of 48 weeks. The recorder visited each farm at intervals of 22 days.

Of the 1157 cows and heifers tested by this society, 414 cows and 119 heifers were included in Class I., and 56 cows and 1 heifer in Class III. Thus, of the total cows and heifers tested, 46 per cent were placed in Class I. and 5 per cent in Class III.

Fenwick (High) Milk Record Society.

A milk record society has been in operation in the Fenwick district since 1905. In 1913 the large number of new applicants could not all be accommodated in one society, so the district was divided and two societies formed—the High Fenwick Society and the Laigh Fenwick Society. At the end of 1915, mainly with a view to economy during the war, it was resolved to revert temporarily to the former arrangement of one larger society. The number of members in 1918 was 21, two less than in the previous year. The number of cows tested by the society was 754, compared with 778 in 1917.

The milk produced by the members of this society is chiefly for direct sale, and cows calve at all periods of the year.

Recording was carried on during the whole year. The recorder visited each farm at intervals of 26 days.

Of the 754 cows and heifers tested by this society, 333 cows and 120 heifers were included in Class I., and 20 cows and 2 heifers in Class III. Thus, of the total cows and heifers tested, 60 per cent were placed in Class I. and 3 per cent in Class III.

The Fife Milk Record Society.

This society was in its sixth year. The number of members in 1918 was 16, a increase of one member from the previous

year. The number of cows tested was 611, practically the same number as in 1917.

Practically the whole of the milk produced in this district is for direct sale, and cows calve all the year round.

Recording was continued during the whole year. The recorder visited each farm at intervals of 20 days.

Of the 611 cows and heifers tested by this society, 244 cows and 64 heifers were included in Class I., and 12 cows and 4 heifers in Class III. Thus, of the total cows and heifers tested, excluding two herds tested during the latter part of the recording season only, 52 per cent were placed in Class I. and 3 per cent in Class III.

"John Speir" Milk Record Society.

(Dalry and Kilbirnie Districts.)

This society was instituted in 1910, and at that time the members were scattered over a very wide dairying district, or series of districts, from Dundonald and Kilmarnock in the south to as far as Dumbarton and Helensburgh in the north. Original members of this society are now included in a number of other local societies. In 1918 the society was in its ninth year. The membership was confined mainly to the Dalry and Kilbirnie districts of Ayrshire. The number of members in 1918 was 24, one more than in the previous year. The total number of cows tested was 588, an increase of 18 from 1917.

Practically the whole of the milk produced by the members of this society is for direct sale, and cows calve at all seasons.

Recording was continued during the whole year. The recorder visited each farm at intervals of 28 days.

Of the 588 cows and heifers tested by this society, 162 cows and 65 heifers were included in Class I., and 67 cows and 8 heifers in Class III. Of the total cows and heifers tested, 39 per cent were placed in Class I. and 13 per cent in Class III.

Kirkcolm and Leswalt Milk Record Society.

This society was instituted in 1908, and was in its eleventh year, though systematic milk recording was commenced in practically the same district in 1906 by the Rhins of Galloway Dairy Association. The number of members of the society in 1918 was 19, one more than in the previous year, and one more than the full membership of the society. The number of cows tested was 1117, an increase of 52 from 1917, and a large number for a society conducting 22 days' tests.

The district is entirely a cheese-making one, and most of the cows calve in the early spring.

Recording commenced on 4th February and continued till 29th November, the records for each herd covering a period of 45 weeks. The recorder visited each farm at intervals of 22 days.

Of the 1117 cows and heifers tested by this society, 266 cows and 105 heifers were included in Class I., and 72 cows and 5 heifers in Class III. Thus, of the total cows and heifers tested, 33 per cent were placed in Class I. and 7 per cent in Class III.

Lesmahagow Milk Record Society.

This society was inaugurated in 1907, and was in its twelfth year. The number of members in 1918 was 22, a decrease of one from the previous year. The number of cows tested was 602, a decrease of 32 cows from 1917.

The district is chiefly a milk-selling one, and on most of the farms cows calve at all seasons, but in a few cases cheese is made, and the majority of the cows calve in the spring months.

Recording was continued during the whole year. The recorder visited each farm at intervals of 28 days.

Of the 602 cows and heifers tested by this society, 262 cows and 110 heifers were included in Class I., and 12 cows and 5 heifers in Class III. Thus, of the total cows and heifers tested, 62 per cent were placed in Class I. and 3 per cent in Class III.

Lower Wigtownshire Milk Record Society.

This society was in its twelfth year. The number of members in 1918 was 22, the same number as in the previous year, and the full membership of the society, as two of the herds required two days' testing on each visit. The number of cows tested was 1240, a decrease of 34 cows from 1917.

The district is almost entirely a cheese-making one, and most of the cows calve during the early spring months.

Recording commenced on 1st February and continued till 6th December, the records for each herd covering a period of 47 weeks. The recorder visited each farm at intervals of 28 days.

Of the 1240 cows and heifers tested by this society, 350 cows and 116 heifers were included in Class I., and 44 cows and 3 heifers in Class III. Thus, of the total cows and heifers tested, 38 per cent were placed in Class I. and 4 per cent in Class III.

Mauchline and Coylton Milk Record Society.

The Mauchline Society was in its eighth year. But owing to the resignation of a few members in this district and a number of resignations in the Coylton district at the end of 1917, and the difficulty of obtaining new members during the war, it was agreed to rearrange the membership of several local societies and to discontinue the Coylton Society as a separate society, and incorporate the majority of the members in the Mauchline and Coylton Society. The number of members in 1918 was 19, two more than the full membership of the society, and the number of cows tested was 709.

Most of the members of this society make cheese during the summer months, and sell milk during late autumn, winter, and early spring. On some of the farms milk is sold during the whole year. Most of the cows calve in spring, but a considerable proportion calve in autumn or winter.

Recording was continued during the whole year. The recorder visited each farm at intervals of 22 days.

Of the 709 cows and heifers tested by this society, 370 cows and 159 heifers were included in Class I., and 6 cows and 1 heifer in Class III. Thus, of the total cows and heifers tested, 75 per cent were placed in Class I. and 1 per cent in Class III.

Monkton and District Milk Record Society.

This society was in its sixth year. The members of this society were situated chiefly in the Monkton, Tarbolton, Symington, and Craigie districts. The number of members in 1918 was 18, the same number as in the previous year, and the full membership of the society. The number of cows tested was 735, an increase of 6 from the previous year.

On some of the farms in this district milk is sold all the year round, and on other farms cheese is made during the greater part of the summer. Cows calve at all seasons, but the greater proportion calve in spring.

Recording was continued during the whole year. The recorder visited each farm at intervals of 21 days.

Of the 735 cows and heifers tested by this society, 300 cows and 113 heifers were included in Class I., and 41 cows and 4 heifers in Class III. Thus, of the total cows and heifers tested, 56 per cent were placed in Class I. and 1 per cent in Class III.

Montgomerie Milk Record Society.

(Irvine and Dundonald Districts.)

This society was in its eighth year. The members were situated chiefly in the Irvine, Dundonald, and Crosshouse districts of Ayrshire. The number of members in 1918 was 21, an increase of two from the previous year. The number of cows tested was 674, an increase of 78 from 1917.

Most of the members of this society sell milk all the year round; their cows calve at all periods of the year.

Recording was carried on throughout the whole year. The recorder visited each farm at intervals of 28 days.

Of the 674 cows and heifers tested by this society, 304 cows and 111 heifers were included in Class I., and 17 cows and 5 heifers in Class III. Thus, of the total cows and heifers tested, 62 per cent were placed in Class I. and 3 per cent in Class III.

Ochiltree Milk Record Society.

This society was in its seventh year. The number of members in 1918 was 18, one more than in the previous year, and one more than the full membership of the society. The number of cows tested was 533, an increase of 31 from 1917.

Most of the members in this district make cheese during the summer, and on some farms milk is sold in autumn and winter. The greater proportion of the cows calve in spring.

Recording was carried on throughout the whole year. The recorder visited each farm at intervals of 21 days.

Of the 533 cows and heifers tested by this society, 286 cows and 94 heifers were included in Class I., and 6 cows but no heifers in Class III. Thus, of the total cows and heifers tested, 71 per cent were placed in Class I. and 1 per cent in Class III.

Renfrewshire (Upper Ward) Milk Record Society.

This society was in its eighth year. The number of members in 1918 was 16, one more than in the previous year. The number of cows tested was 653, an increase of 19 from 1917.

The members of this society produce milk for direct sale, and their cows calve at all seasons.

Recording was continued during the whole year. The recorder visited each farm at intervals of 20 days.

Of the 653 cows and heifers tested by this society, 217 cows and 75 heifers were included in Class I., and 28 cows and 5

heifers in Class III. Thus, of the total cows and heifers tested, 45 per cent were placed in Class I. and 5 per cent in Class III.

Stewarton and Dunlop Milk Record Society.

This society was in its fifth year. The members were situated throughout the wide and important dairying districts of Lugton, Dunlop, Stewarton, Kilwinning, Beith, Montgreenan, and Kilmaurs. The number of members in 1918 was 21, a decrease of 7 members from the previous year. The number of cows tested was 743, a decrease of 206 cows from 1917.

In the districts of this society all the usual systems of dairying are carried on. On most of the farms milk is sold all the year round; on some butter is made; and on others the surplus milk is made into cheese during the summer months. Cows calve at all periods of the year.

Recording was carried on throughout the whole year. The recorder visited each farm at intervals of 22 days.

Of the 743 cows and heifers tested by this society, 262 cows and 126 heifers were included in Class I., and 29 cows and 12 heifers in Class III. Thus, of the total cows and heifers tested, excluding one herd not tested to the end of the recording season, 54 per cent were placed in Class I. and 6 per cent in Class III.

The Stewartry Milk Record Society.

As in former years, the whole of the milk recording in the Stewartry of Kirkcudbright was carried on under the direction of one County Milk Record Society. This system offers several advantages. All overlapping of circuits is avoided. There is no difficulty in accommodating all new applicants at the beginning of each year, no matter from which districts the applications come. Where an ordinary local society at the end of the year falls temporarily short of full membership, the existence of the society is threatened, owing to the expense becoming proportionately greater for the remaining members; but in the case of a county society employing more than one recorder, new members at a considerable distance, or even at the other end of the county, may take the places of retiring members, and all members pay on the same basis.

The Stewartry Milk Record Society was formed in 1906, and in 1918 the society was in its thirteenth year. The total number of members was 37, a decrease of 4 from the previous year. The total number of cows tested was 2327, compared with 2368 in 1917.

The Stewartry Society employed two recorders in 1918.

Circuit No. 1.

(New Abbey, Kirkbean, Dalbeattie, and Castle-Douglas Districts.)

The number of members on this circuit was 17. They were situated in the eastern portion of the county, mainly in the New Abbey, Kirkbean, Dalbeattie, and Castle-Douglas districts. The number of cows tested was 1031.

Most of the dairy farms in the Stewartry are cheese-making farms, and the great majority of the cows calve in the early spring months.

Recording was continued throughout the whole year. The recorder visited each farm at intervals of 22 days.

Of the 1031 cows and heifers tested on this circuit, 239 cows and 118 heifers were included in Class I., and 110 cows and 7 heifers in Class III. Thus, of the total cows and heifers tested, 35 per cent were placed in Class I. and 11 per cent in Class III.

Circuit No. 2.

(Castle-Douglas and Kirkcudbright Districts.)

The number of members on this circuit was 20. The members were situated chiefly in the Kirkcudbright district and towards Castle-Douglas. The number of cows tested was 1296, the largest number tested by the recorder in a 22 days' circuit in 1918.

The district is very largely a cheese-making one, and practically all the cows calve in the early spring.

Recording was carried on throughout the whole year. The recorder visited each farm at intervals of 22 days.

Of the 1296 cows and heifers tested on this circuit, 231 cows and 128 heifers were included in Class I., and 88 cows and 13 heifers in Class III. Thus, of the total cows and heifers tested, 28 per cent were placed in Class I. and 8 per cent in Class III.

General Review.

It was inevitable that milk recording in 1918, as in the two previous years, should be adversely influenced by the war. The war was in its fourth year and in its most critical stage, and the strain upon all branches of production had greatly increased. But upon no capital industry were war conditions pressing more severely than upon agriculture, particularly milk production.

The labour problem in dairy farming had reached an acute stage at the end of 1917, when so many of the most useful workers, both men and women, had been withdrawn for services more directly connected with the war. Even under normal pre-war conditions, dairy farming was one of the most laborious of occupations, entailing long hours of constant labour of a relatively exacting nature; but the difficulty of obtaining experienced dairy workers, and efficient milkers in particular, had greatly increased with each year of the duration of the war.

The shortage of concentrated feeding stuffs also, which had become more and more evident during 1917, was in no way diminished towards the end of that year. And experience had taught milk recording farmers the great influence in milk production generally, and in the cases of heavy-milking cows in particular, of efficient milking and adequate feeding. Naturally, therefore, members of local societies feared that the abnormal conditions of milk production likely to prevail during 1918 would not be conducive to the obtaining of high milk records. And unfortunately many members still clung to the belief that the principal advantage from official milk records depended upon the ability to obtain unusually high milk yields, which would enhance the capital or selling value of their stock; and a number preferred to discontinue recording until conditions of milk production became more normal.

Another factor discouraging to milk recording in 1918 was the compulsory ploughing of more land. In consequence of increased ploughing the labour supply became still more inadequate, and on this account less interest was maintained in milk production. In many cases dairy farmers, in order to comply with this regulation, found themselves obliged either to reduce their dairy herds or the acreage of pasture per cow.

Owing to the resignation of members at the end of 1917, and to the fact that few new members could be obtained, and from other causes due to the continuance of the war, two local societies, namely, The Kirkcolm and District Society and The Coylton and District Society, were unable to continue as separate societies in 1918; though in both cases it was hoped that recording would be resumed on the same scale as formerly after the war. However, a certain number of the members of these societies who desired to continue recording without interruption were able to obtain admission to other local societies.

On the other hand, the great majority of members of local societies, realising that the primary object of milk recording was to enable them to know exactly the relative merits of their cows, and to improve the inherent or hereditary milking qualities of their herds by selecting and breeding on milk re-

cord lines, decided to continue recording under any circumstances. Recording was continued in 1918 by 22 local societies, comprising 426 members, compared with 24 societies and 465 members in the previous year. The number of cows tested was 17,827, a decrease of 1737 from 1917.

No new societies were formed in 1918. But a number of new applications for membership were obtained from individual farmers throughout the various districts, and as many as possible of these applicants were included in existing societies. It was not found possible, however, to obtain accommodation in local societies for all applicants for membership. New applicants were widely scattered over the various districts, and in many cases the nearest society had already a full membership, and deemed it inadvisable to unduly extend the interval between tests, which would be necessary were further members to be admitted.

This difficulty points to a difficulty in the Association's present scheme of milk recording, namely, that of inducing local societies which have already a full membership, or the individual members concerned, to re-arrange membership with neighbouring societies so as to allow of all local applicants being accommodated. The Executive Committee have had this matter under consideration.

It was evident also that many other dairy farmers were deeply interested in milk recording; and it is confidently expected that many new members annually will be admitted to local societies when conditions for milk production become more normal.

The Association feel that, when all the circumstances are taken into account, it is a matter for congratulation that they have been able to carry on during the war on the scale they have. Though the reduction in members and animals tested has certainly been considerable, the usefulness of the scheme has not been diminished in anything like the same proportion. It must be evident that many of the members of local societies who resigned earlier in the war were among the less interested members, who had failed to fully realise all the advantages of the scheme. On the other hand, it must be assumed that the larger number of members, who have consistently adhered to the practice of milk recording throughout the war, under exceptional difficulties, have thoroughly convinced themselves, and have demonstrated to the general body of dairy farmers in Scotland, that the benefits to be derived from milk recording on systematic lines far outweigh the trouble and expense involved. War conditions have served only to bring out this result more clearly, and to enhance the financial reward of initiative in this direction.

During the year 13 recorders, for various reasons, terminated their engagements. The Committee, however, in the same period, approved of 14 applicants for the position of milk recorder, and were able to recommend a sufficient number of qualified recorders—women-recorders, young men-recorders ineligible for military service, and young men discharged from the army.

In this connection the Committee, as formerly, were indebted to the West of Scotland Agricultural College for meeting the Association's requirements by giving a special course of instruction for milk recorders in December 1917, in time to allow of vacancies being filled before January. Eight selected candidates attended this course, and seven obtained the certificate and were available for appointment on 22nd December. This special course of instruction in milk recording at Kilmarnock was extended from two to three weeks' duration, and students obtained considerably more practice daily in the testing of milk samples and in the calculating and filling up of record sheets; changes which resulted in a higher degree of efficiency in new recorders.

Twenty-three women-recorders were employed in 1918, and nine young men-recorders. From several years' experience of women-recorders it is evident that the woman-recorder has become a permanent feature of milk recording. Experience has proved that qualified women-recorders of the right type are quite capable of successfully carrying out all the duties connected with milk recording. The Chairman of the Association, at the meeting in January 1919, stated that in his opinion women-recorders in general were quite as efficient and popular as men-recorders; and this appeared to be the experience of the local societies employing women-recorders represented at the meeting. It would appear that, on the whole, women-recorders continue longer in their appointments, an advantage of no little importance; as frequent change of recorders tends to diminish the reliability of the records and the popularity of recording among the members.

The superintendent observed a noticeable improvement in the work of recorders generally in 1918, compared with previous years, and it is hoped that this improvement may continue. Of all the factors affecting the progress of milk recording, the efficiency of the recorder is probably one of the most important.

The Committee were able to purchase sufficient supplies of milk-testing apparatus for local societies at the same prices as in the previous year. They were also able to obtain the necessary supplies of sulphuric acid and amylic alcohol at the same price as in 1917.

The unfavourable conditions for milk production in 1918,

already referred to, could hardly fail to react to a considerable extent on the milk records. In addition, the weather during the summer months was by no means favourable for dairy cows. The summer was much too dry, and in very many instances pasture suffered badly from the drought, and, in consequence, the cows from the lack of sufficient grass. The weather during the autumn months, on the other hand, was unusually wet and stormy.

The following table shows for each society the number and percentage of cows and heifers of each class:—

Society.	Cows and Heifers.				
	Number.			Percentage.	
	Total.	Class I.	Class III.	Class I.	Class III.
1. Annandale	975	759	18	78	2
2. Ayr and Stair	993	481	51	48	5
3. Central Ayrshire No. 1	586	317	30	54	5
4. Cumnock	610	305	13	50	2
5. Dumbartonshire	556	259	40	47	7
6. Dumfries and Nithsdale (Lower)	763	331	83	43	11
7. Dumfries and Nithsdale (Upper)	901	400	76	44	8
8. Dunragit	1157	533	57	46	5
9. Fenwick (High)	754	453	22	60	3
10. Fife	611	308	16	52[1]	3[1]
11. "John Speir"	588	227	75	39	13
12. Kirkcolm and Leswalt	1117	371	79	33	7
13. Lesmahagow	602	372	17	62	3
14. Lower Wigtownshire	1240	466	47	38	4
15. Mauchline and Coylton	709	529	7	75	1
16. Monkton and District	735	413	45	56	6
17. Montgomerie	674	415	22	62	3
18. Ochiltree	533	380	6	71	1
19. Renfrewshire (Upper Ward)	653	292	33	45	5
20. Stewarton and Dunlop	743	388	41	54[1]	6[1]
21. Stewartry No. 1	1031	357	117	35	11
22. Stewartry No. 2	1296	359	101	28	8
Of all the cows and heifers tested in 1918	17,827	8,715	996	49[1]	5½[1]
Comparison with 1917	19,564	9,700	919	50	4¾
Comparison with 1916	22,702	11,702	1042	53¼	4¾
Comparison with 1915	26,572	12,313	1561	46	6
Comparison with 1914	26,424	10,439	2307	39½	9

[1] Excluding herds tested during only a part of the recording season: 3 herds (59 cows) in all.

Reviewing the results of the twenty-two societies as a whole, we find that of 17,827 cows and heifers tested in 1918, 8715, or 49 per cent, were included in Class I., and 996, or 5½ per cent, in Class III.

Thus, 49 per cent of all the cows and heifers tested gave a milk yield equivalent to not less than 714 gallons containing 3·5 per cent milk fat in the case of a cow, and 571 gallons in the case of a heifer; while only 5½ per cent gave a milk yield equivalent to less than 474 gallons, containing 3·5 per cent milk fat in the case of a cow, and 380 gallons in the case of a heifer. In 1917, 50 per cent were eligible for Class I. and 4¾ per cent were included in Class III.; so that the records of 1918 compared with the records of the previous year show only a very slight falling off of 1 per cent in Class I., and an increase of ¾ per cent in Class III. The reduction in average milk yield was approximately only ·7 per cent.

A comparison of the records of individual societies in 1918 with the records of the same societies in the previous year gives interesting results. Eleven societies improved on their records of 1917, while the remaining 11 societies had a lower percentage of Class I. animals than in 1917. But it is significant that most of the former societies operated in districts where the soil generally was of a heavier and more retentive character, and better adapted to withstand the summer drought; while the majority of the latter societies were situated in districts where the soil as a whole was of a lighter and drier nature; notably in Kirkcudbrightshire and Wigtownshire. Thus, excluding only the local societies in the latter two counties and considering the whole of the remaining 17 societies, we find that in 1917 the average proportion of animals in Class I. was 54 per cent, while in 1918 it was increased to 55 per cent, actually an improvement in 1918 of 1 per cent in Class I., in spite of all adverse circumstances. This improvement appears all the more creditable when we remember that dairy herds generally, apart from milk recording herds, did not maintain their former milk yields during the year under review.

There is little doubt also that had only the weather been as favourable as in the previous year, the milk records as a whole in 1918 would have been higher than in 1917.

Further, notwithstanding the obligation upon them to plough up more land and produce more grain crops than in any previous year, milk-recording farmers not only produced practically as much milk per cow as in 1917, but also maintained their dairy stock at the same average number of cows per herd as in the previous year, namely, 42 cows.

Considering all the circumstances, the milk records of 1918 were much better than might have been anticipated, and were

considerably higher than in either 1915 or 1914, when conditions were practically normal. Further, had the conditions for milk production generally been as favourable in 1918 as in 1916, before war conditions had come to be severely felt, it is practically certain that the milk records of 1918 would have eclipsed those of 1916, which was the best year in this respect since milk recording was introduced.

Thus, there is sufficient evidence from the milk records of 1918 and of previous years that systematic milk recording in Scotland is producing a steady improvement in the inherent or hereditary milking qualities of the herds tested. The improvement in this respect in 1918 was no doubt largely obscured by the effect of exceptionally unfavourable circumstances over which the owners of the herds had no control; but it may confidently be expected that the increase in actual milk yields of the herds tested will be all the greater in the years to come, when conditions have become more normal.

The advantages derived from milk recording in 1918 were probably greater than in any previous year. The milk increase directly due to selecting, breeding, and feeding on milk record lines was of considerably greater value on account of the record prices ruling for milk in this country during the war.

Milk recording, again, enabled owners to feed their cows on more scientific lines, more directly in proportion to actual milk yields, and thus to use the available foods to greater advantage. In 1918 feeding-stuffs were at greatly inflated prices, and therefore the advantage accruing from a more effective system of feeding for milk production was correspondingly increased.

It has become quite evident, also, that the dairy farming public are year by year placing greater confidence in the reliability of the Association's official milk records, and are also realising more fully the importance of using only stock bulls off proved good-milking strains. This change in attitude to official milk records was most clearly reflected in the great advance in prices obtained for the best milk record stock at public sales in 1918-1919. New and greatly increased record prices and much higher average prices were obtained. And, what is still more significant, the increase in prices obtained for animals with specially good official milk records, over prices ruling for similar stock with more ordinary official milk records, or with no official milk records, was greater in 1918-1919 than ever before since milk recording on a public basis was instituted. This is a feature in the development of milk recording which is specially encouraging to milk recording farmers generally, and which augurs well for its future extension.

The Association's Special Register of Class I. Cows and

Heifers giving full particulars of the milk records, and the names and addresses of owners, published as an appendix to their annual report, was issued for the first time in 1918, and contained over 5000 1917 Class I. records. The publication of this register annually will enable intending purchasers to know where good milking stock are to be found, and cannot fail to have a great influence in further extending among the rank and file of stock-breeding dairy farmers the practice of using only stock bulls off proved good-milking strain, and in increasing the demand for such animals. In consequence, the benefits accruing from systematic milk recording to owners of good-milking herds will in future be still further increased; and a direct stimulus will be given to dairy farmers generally to adopt official milk recording and grade up their herds as quickly as possible.

Surely an important stage in the history of milk recording has been reached when a new standard of judging Ayrshire cattle has been unanimously agreed upon by breeders generally, whereby the Association's official milk records must in future be taken into account in making the awards. From 1920 onwards a maximum of 35 points out of a total maximum of 100 points are to be reserved for allocation, according to a definite scale, for authenticated milk yields only, the only milk yields to be recognised being the official milk records of the Association. This is an event of pre-eminent importance, the significance of which can hardly be overestimated, not only in the history of milk recording but in the history of the Ayrshire breed. And other recognised dairy breeds must soon be forced into the same position. It sets the seal on the success of the movement originated by the pioneers of milk recording in Scotland. Had the late John Speir known that his earlier efforts in this direction were to lead to this result in 1920, he would have been greatly encouraged in his endeavours at a time when every encouragement was required. The adoption of this new standard of judging dairy cattle must tend greatly to increase the advantages of milk recording and to concentrate the attention of the rank and file of non-recording dairy farmers on these advantages, and to hasten its development considerably.

For the several reasons referred to, it may safely beasserted that at no time previously were the benefits to be gained from the Association's scheme of milk recording greater than in the year 1918. And never were the prospects of milk recording in Scotland more promising than at present. It is quite evident that, whatever schemes of re-construction are to be applied to agriculture, a prominent place will be given to the improvement of milking qualities of cows by systematic milk recording. This

has been recognised by the authorities as one of the most important methods of improvement that can be applied to the dairying industry.

With regard to immediate future developments, the Association are anxious to further increase, if possible, the confidence of the general public in the authenticity of their official records, and, as far as possible, to disarm criticism in this direction. A new regulation has been brought into force whereby cows in a herd must be milked in the same rotation, evening and morning, and the hours of milking of each cow, evening and morning, entered in the Byre Sheets together with the quantities of milk yielded.

A new tattooing system is to be introduced in 1920. Every animal tested is to be identified by a distinctive indelible mark tattooed on the animal, and the distinguishing marks are to be entered in the milk record books.

The Executive Committee have also under consideration several proposed schemes of Surprise Check Tests, whereby the records of all herds tested will be periodically checked by surprise tests made probably during the twenty-four hours immediately following upon the ordinary visit of the recorder. It is intended that the system of surprise double tests decided upon will also be brought into operation in 1920.

THE CEREAL AND OTHER CROPS OF SCOTLAND FOR 1918, AND THE WEATHER OF SCOTLAND IN 1918.

THE CROPS.

THE following comparison of the cereal and other crops of 1918 with those of the previous year has been prepared by the Secretary of the Society from answers to queries sent to leading agriculturists in different parts of the country.

The queries issued by the Secretary were in the following terms:—

1. What was the quantity, per imperial acre, and quality of grain and straw, as compared with last year, of the following crops? The quantity of each crop to be stated in bushels. What quantity of seed is generally sown per acre?—(1) Wheat, (2) Barley, (3) Oats.
2. Did the harvest begin at the usual time, or did it begin before or after the usual time? and if so, how long?
3. What was the quantity, per imperial acre, and quality of the hay crop, as compared with last year, both as regards ryegrass and clover respectively? The quantity to be stated in tons and cwts.
4. Was the meadow-hay crop more or less productive than last year?
5. What was the yield of the potato crop, per imperial acre, as compared with last year? The quantity to be stated in tons and cwts. Was there any disease? and if so, to what extent, and when did it commence? Were any new varieties planted, and with what result?
6. What was the weight of the turnip crop, per imperial acre, and the quality, as compared with last year? The weight of the turnip crop to be stated in tons and cwts. How did the crop braird? Was more than one sowing required? and why?
7. Were the crops injured by insects? State the kinds of insects. Was the damage greater or less than usual?
8. Were the crops injured by weeds? State the kinds of weeds. Was the damage greater or less than usual?
9. Were the pastures during the season of average growth and quality with last year?
10. How did stock thrive on them?
11. Have cattle and sheep been free from disease?
12. What was the quality of the clip of wool, and was it over or under the average?

From the answers received, the following notes and statistics have been compiled:—

EDINBURGH DISTRICT.

Mid-Lothian. *Wheat*—About 40 bushels per acre; straw about the same as last year; 3 bushels seed sown. *Barley*—A very good crop; about 40 bushels; 3 bushels seed sown. *Oats*—From 40 to 48 bushels; seed sown—potato oats 4 bushels; other varieties 5 bushels. *Harvest*—About the same time as last year; got very good weather, and all secured in fine order. *Hay*—About the same as last year, and well got. *Meadow-hay*—None. *Potatoes*—2 tons less than last year; no disease; no new varieties. *Turnips*—10 to 20 tons, or a great deal less than last year; only one sowing. *Insects*—No damage by insects. *Pastures*—Very good. *Live Stock*—Throve well. Cattle and sheep quite free from disease. *Clip of wool*—About the average.

West Lothian. *Wheat*—Yielding better this season, say 52 bushels; seed sown, 4 bushels; straw good. *Barley*—Much the same as last year, yielding 48 to 50 bushels; seed sown, 4 to 5 bushels. *Oats*—Much the same as last year, yielding say 46 to 48 bushels; straw much shorter owing to drought. *Harvest*—Began about the usual time, but lasted longer owing to the weather breaking down about middle of harvest. The last of the crop was harvested in bad condition. *Hay*—Much the same as last year, say 50 to 60 cwt. per acre. *Meadow-hay*—A good crop; not so well secured owing to the weather breaking down. *Potatoes*—Barely so good as last year; early varieties about 4 to 5 tons per acre, lates say up to 8 or 9 tons. Potatoes sold by acre to dealers, owing to scarcity of labour, were very long in being lifted, and with early frost some would be damaged. *Turnips*—Very deficient; 18 tons considered a good crop. They were long in brairding, and after they did come they were attacked by the fly, and frost in the mornings, which caused a considerable amount of resowing. In some districts three sowings had to be done. *Weeds*—No injury by weeds. *Pastures*—Bare at the beginning of season owing to drought. *Live Stock* did not do too well. Cattle and sheep were practically free from disease. *Clip of wool*—Good.

East Lothian (Upper District). *Wheat*—40 bushels; quality good, but did not thrash so well as previous year; considerable quantity grown as second white crop in succession; straw, 38 cwt.; seed, 4 bushels. *Barley*—46 bushels; straw under an average; some of the new varieties grown are of shorter straw; seed, 3¼ bushels. *Oats*—60 bushels; this crop varied considerably from last year on certain soils, hence the decrease of average; the rougher varieties still appear to be in the ascendant, especially in the lower districts; seed, 4 to 6 bushels, according to variety. *Harvest*—Little alteration from usual time. *Hay*—Considerable quantity under an average; would not exceed 2 tons; where eaten with stock in the spring, 1½ tons were secured. *Meadow-hay*—None grown. *Potatoes*—Less than the previous year; 7 tons an average for the usual varieties grown; some of the newer ones 2 tons more, but grown in small quantities yet; no disease. *Turnips*—This crop varied very much; some farms a total failure, after being sown three times, plants being all consumed by turnip-fly; some exceptions where early sown, and in very high districts would average 15 tons, others not 5 tons—in fact the greatest failure in the memory of the present generation of

farmers. *Weeds*—Less than usual. *Pastures*—Average growth. *Live Stock*—Average. Cattle and sheep free from disease. *Clip of wool*—Considered an average.

EAST LOTHIAN (Lower District). *Wheat*—40 to 48 bushels; a good crop; quality good; seed, 3 bushels drilled, 4 broadcast. *Barley*—A small bulk; drought stunted the crop on light soils; average crop about 40 to 44 bushels; quality good; seed, 3 bushels drilled. *Oats*—Small bulk, light crop; thick-skinned varieties averaging about 60 to 64 bushels, others 40 to 48; drought severely affected crop; seed sown, 4 bushels potato varieties, 5 to 6 thick-skinned varieties. *Harvest*—Began a few days sooner than average, about four days. *Hay*—Good crop; fine quality, well got; average crop about 2½ tons. *Meadow-hay*—None grown. *Potatoes*—Crop 2 tons per acre less than last year, which was a record one; average about 7 tons; no disease; several new "immune" varieties planted; "Ally," "Majestic," and "Great Scot" all did well, though "Majestic" blanky in many cases owing to cut seed. *Turnips*—Largely a failure—a few exceptional fields; worst crop for thirty years, averaging perhaps 12 tons per acre; brairded badly; many fields resown three times; drought and fly the cause. *Insects*—Fly carried off young braird to a large extent. *Weeds*—More than usual; shortage of labour, principal cause. *Pastures*—Good at first, then droughted. *Live Stock*—Throve fairly well. Cattle and sheep free from disease. *Clip of wool*—Good; quite average.

BORDER DISTRICT.

BERWICKSHIRE (Merse). *Wheat*—42 bushels; straw and grain good quality; seed, 4 bushels. *Barley*—36 bushels; when not too late, quality good; seed, 3 to 3½ bushels. *Oats*—38 to 40 bushels; generally damaged by bad harvest weather; 4 to 6 bushels sown. *Harvest* began about normal time. *Hay*—35 cwt.; excellent quality. *Meadow-hay*—In later districts a better crop, but generally poor; 25 cwt. *Potatoes*—About 7 tons, and free from disease. No great extent of ground planted with new varieties. *Turnips*—Very poor crop. Weather too dry at seeding time. *Insects*—Damage not abnormal, except when old pasture land was broken up for crop. In these conditions leather-jackets and eel-worms did considerable damage in places. *Weeds*—Crops not specially injured. *Pastures*—Only fair; season very dry in early part. *Live Stock* throve in an average way. Cattle and sheep generally free from disease. *Clip of wool*—Above average.

BERWICKSHIRE (Lammermoor). *Wheat*—Almost none grown. *Barley*—34 bushels; average quality grain and straw; seed, 3 to 3½ bushels. *Oats*—32 bushels; quality of more than a third of both grain and straw very inferior, owing to wet harvest. Some very light crops—others on fresh land where not damaged by insects, heavy crops—generally well ripened. *Harvest*—About usual time. *Hay*—Rotation-hay was poor crop of good quality, 28 to 30 cwt. *Meadow-hay*—About three-fourths of last year's crop; about 20 to 22 cwt. *Potatoes*—A ton to a ton and a half less than last year. Crop fair quality; about 6 tons. A small proportion of crop, late in being taken up owing to late harvest and want of labour, was frosted in November. *Turnips*—Generally very poor; about 12 to 15 tons; some fields where ground was ploughed—instead of worked with grubber—were excellent crops up to 25 to 30 tons, but generally drills were made up too dry to braird satisfactorily. *Insects*—Leather-jackets and eel-worms very plentiful on old grass lands

ploughed for crop, and in some cases considerable damage was done. *Weeds* less than usual. *Pastures*—Very poorly early, but better later; but generally barer than average. *Live Stock*—Generally about an average. "Scrapie" prevalent in sheep, and cattle in many cases showed more symptoms of tuberculosis than normal. *Clip of wool*—Over an average.

Roxburghshire. *Wheat*—Very little wheat grown. *Barley*—30 bushels; straw, 20 cwt.; good quality; better than last year; seed, 3 bushels. *Oats*—36 bushels; 20 cwt. of straw of good quality; seed, 4 to 6 bushels. *Harvest*—About a fortnight later than usual; a great deal of damaged corn from the heavy rains after the grain was stacked and before being covered. *Hay*—From 25 to 35 cwt., and of good quality. *Meadow-hay*—A very poor crop. *Potatoes*—On an average barely up to last year; no disease; wet weather during lifting. The average might be 7 tons per acre. *Turnips*—Swedes generally a fine crop; 20 tons; yellows very irregular; many acres quite impossible to estimate. A great deal of the crop very late in brairding, and a good deal of resowing. Many fields of yellows suffered much from a disease which attacked only the yellows. The leaves died off from insects, and small worms penetrated the bulbs and caused a sort of rot. *Weeds*—Turnips were fairly well cleaned. *Pastures*—Quite of average growth. *Live Stock*—Stock did well. Cattle have been healthy. The loss of sheep has not been above the average except where affected by "scrapie," which is spread over many flocks. *Clip of wool*—A good clip of wool; a good average.

Selkirkshire. *Wheat*—42 bushels; good quality; seed, 4 bushels per acre. *Barley*—36 bushels; seed, 3½ to 4 bushels per acre. *Oats*—39 bushels; bad weather caused a considerable loss from shedding; seed, 5 bushels per acre. *Harvest*—About a week later, and owing to bad weather was unduly protracted. *Hay*—1¾ tons of good quality. *Meadow-hay*—Only the early meadows were secured in good order; on late meadows at least one-half was practically lost. *Potatoes*—7 tons; a good crop; no disease. *Turnips*—A very unequal crop; taken all over at least 30 per cent below an average; some brairds were destroyed by late frosts, and in early districts the dry weather retarded brairding, and a considerable acreage was resown. *Insects*—More turnip-fly than for some years. *Weeds*—It would be difficult to say that more damage was done by weeds, but they are more in evidence through shortage of labour. *Pastures*—Average growth. *Live Stock*—Throve very well. Cattle and sheep free from disease. *Clip of wool*—Both in quality and quantity a full average crop.

Peeblesshire. *Wheat*—Very little grown, if any. *Barley*—42 to 45 bushels; 1 ton straw; seed, 4 bushels. *Oats*—48 to 50 bushels were secured before weather broke, and 40 bushels where not so secured; 1 ton straw per acre. Seed sown—thick-skinned oats fully 5 bushels, and ordinary oats nearly 5 bushels per acre. *Harvest* began about usual time in beginning of September. *Hay*—Moderate hay crop. Ryegrass about 30 cwt. per acre. Meadow hay about 33 cwt. All secured in splendid condition. *Meadow-hay*—Less productive but well got. *Potatoes*—Something similar to last year; about 6 tons per acre. *Turnips*—Turnip crop good in some places, with about 18 tons per acre where no resowing was required; quality good; brairded very slowly, and where they had to be resown a disappointing crop followed, as season was too far advanced before they came to the hoe. *Insects*—No injury from insects except fly, which did some damage to turnip crop as it brairded. *Weeds*—Turnip crops suffered from weeds owing to lateness of coming to

the hoe. *Pastures*—Average growth and quantity very good. *Live Stock* throve well. Cattle free from disease and sheep did exceedingly well. *Clip of wool*—Wool clip rather heavier than last year and quality very good.

DUMFRIES DISTRICT.

DUMFRIES (Annandale). *Wheat*—No wheat grown. *Barley*—Less barley sown than usual, but an average crop. Both straw and grain would compare favourably with last year in weight of crop. Grain better quality, as the crop was secured earlier than the oat crop and was favoured by better weather. Yield of grain about 35 bushels; straw, 24 cwt. per acre; seed sown, 3½ to 4 bushels per acre. *Oats*—Favoured by dry weather in March an early start was made with seeding, sowing being general about 15th March, and ideal weather for getting the seed in continued until the work was finished about the middle of April. Moist and mild weather was experienced during May, and this brought the braird through the critical stage. This was followed by a fortnight of cold barren weather from 1st June. This crop did not seem to be so much affected by this as were the pastures, and continued to make good progress throughout the season. Again, as in 1917, any good old pasture-land sown with oats "lodged" before the crop was ripe, and considerable loss resulted. Harvest began somewhat early in good weather, but the weather broke about the 25th of August before cutting was finished, and thereafter was very unsettled. Farmers had a very anxious time during September until the middle of October, when the greater part of the fields was cleared; afterwards there was no opportunity for securing any more of the crop, and on not a few farms the damaged and sprouting grain was carted to the cattle on the pastures. Had favourable weather continued during harvesting, the crop might almost have been classed as a record one as regards both bulk and yield. Though damaged by undue exposure in the fields, the yield is about the average. This is partly accounted for by the fact that more of the newer, heavy-yielding varieties were sown. The average this year may be put at 40 tons. Straw plentiful, but of poor quality. When sowing the older varieties, such as "Potato" and "Sundry," from 5 to 6 bushels is sown per acre. "Record," "Victory," and "Yielder," 6 to 7 bushels. *Harvest* began on 15th August, eight days before usual time. *Ryegrass Hay*—This crop was below an average, owing to a cold and barren June, especially during the first half of the month. The weight of crop may be put at from about 26 to 28 cwt. per acre, against 33 in 1917. Clover, owing to the cold weather in June, was almost a failure. The crop consisted almost entirely of ryegrass. It was secured in good order, and this partially made up for shortage in weight. Like the ryegrass *Meadow-hay* was also under the average. Grass was short and thin in the bottom. In earlier districts the crop was secured without a shower, but on higher farms there was much discoloration, owing to wet weather. Weight, about 25 cwt. per acre. *Potatoes*—About 7 tons per acre, against 8 last year, but this loss of weight was more than made up by an increased acreage. There was no disease; but owing to an unusually mild winter there were great complaints of sprouting in pits. Farmers state that they have seldom seen such a strong growth even in the end of March. *Turnips*—An average crop, but a less breadth was sown than last year. Resowing was seldom necessary. Plants were somewhat slow in coming to the hoe owing to cold weather, but with favourable weather in autumn the crop was quite an average one. *Insects*—Little damage was done by insects. *Weeds*—Less damage from weeds than in 1917. On certain soils

charlock was in evidence, but result not serious. *Pastures* suffered during the cold weather in June and did not recover until late summer, when matters improved, but quality could not be stated as equal to former years. *Live Stock* did not do so well as usual. Cattle and Sheep have generally been healthy, death-rate being considered low. *Wool*—Quality good, and over the usual average weight.

Dumfriesshire (Nithsdale). *Oats*—45 bushels; an average crop. *Harvest*—The usual time. *Hay*—About 5 cwt. less than last year. *Meadow-hay*—10 cwt. more than previous year; grew very quickly after the weather broke. *Potatoes*—4 tons less than previous year; no disease; the small quantities of new varieties planted did no better than the old. *Turnips*—Where turnips came away right, and were not lifted too soon, they proved a very heavy crop; 25 tons; others not worth mentioning. *Insects*—No damage done. *Weeds*—No injury by weeds. *Pastures* of average growth on heavy land; on light land cattle throve where there was water better than could be expected. Cattle and sheep have been free from disease, except for an outbreak of sheep scab in upper part of the county. *Clip of wool*—Quality good and about 10 per cent heavier.

Dumfriesshire (Eskdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—A fair average crop; in some places very badly laid by continual rains just prior to harvest. Grain where well got threshing out well, but in majority of cases the stooks stood out for weeks, consequently, a lot of grain fell off before being carted, as most of the sheaves had to be untied to be dried; average yield will be between 35 and 40 bushels per acre; quality of straw mostly very poor; seed, about 6 bushels per acre. *Harvest*—About the usual time. *Hay*—Ryegrass hay a fairly good crop, although weather rather dry for it; mostly all got in first-rate condition. *Meadow-hay*—Only a moderate crop, owing to dry weather; mostly got in very good condition. *Potatoes*—Similar to last year, a good sound crop, and would be 8 tons per acre. Very little disease. *Turnip* crop was very good; about 20 tons per acre and very good quality. In most cases the crop brairded very well, and only in a few cases was more than one sowing required. *Insects*—No damage by insects. *Weeds*—No damage by weeds, much less than usual, as the weather was very dry when hoeing was taking place, and all weeds pushed out were killed. *Pastures*—Got rather burned up towards end of June, but after rain came they picked up remarkably well. *Live Stock*—Stock throve exceedingly well; cattle free from disease, but heavy death-rate amongst hill hoggs from braxy; more deaths this autumn on many places than there have been for years, and places where braxy was practically unknown previously have suffered severely. *Clip of wool*—Weight of clip much above last year, and quality also much better.

Kirkcudbrightshire. *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop; much laid, and considerable wastage in consequence. Yield 55 bushels per acre. Straw, 1½ tons per acre. Seed, 4 bushels per acre. *Harvest* commenced about usual time, but was very protracted. *Hay* crop was inferior to that of 1917; about 1¼ tons per acre. *Meadow-hay* a heavy crop, exceeding last year's. *Potatoes*—Yield of early crop was lower than 1917, owing to a cold drought in June, and yielded up to mid-July only 4 to 5 tons per acre. Late varieties did well, and 10-ton crops and over quite common. A large extent of immune varieties was grown, mainly "Great Scot" and "Lochar," the former a fine cropper, but very liable to blight and no great quality. "Lochar" was blanky and

not in favour. *Turnips*—Crop braided badly and much resowing required, but eventually the crop generally was good; quite 20 tons per acre. *Insects*—No injury done, except turnip fly. *Weeds*—No injury done. *Pastures* good and comparable with last year. *Live Stock*—Stock did well. Cattle and sheep free from disease.

WIGTOWNSHIRE. *Wheat*—About 40 bushels; grain good; straw very good; 4 bushels sown per acre; very small acreage under wheat. *Barley*—40 to 45 bushels; grain good; straw heavy. *Oats*—46 to 52 bushels; grain good when harvested; very heavy crop of straw; when sown with drill about 4 bushels per acre; by hand about 6 bushels; about one-third of the crop was lost or damaged by the exceedingly wet weather during the time the crop was being cut and before it could be carted into stack-yard. *Harvest* was fairly early, beginning about 26th August; the weather was fairly good for those who were early, but it broke down about the middle of the general cutting, with the result that the in-gathering was protracted until the end of October. *Hay*—About 22 to 26 cwt. per acre; in a few cases hay was fairly well got, but in general the quality was spoiled by too much rain in the making. *Meadow-hay*—This was a very good crop—about as good as last year and much better got. *Potatoes*—From 5 to 7 tons per acre, fully one-third below last year. Not much disease, but potatoes much too wet to keep well in pits. No specially new varieties. *Turnips*—15 to 18 tons per acre; quality fairly good, but the crop as a whole not to be compared with last year. Very early sown turnips brairded well, but the general sown crop brairded badly owing to drought and heavy white frosts in the mornings. In some cases two or three sowings were necessary. *Insects*—No damage by insects or weeds. *Pastures* were nothing like an average; the prolonged drought and cold winds kept them down in the early summer and they never gave a full bite. *Live Stock*—Cows were too bare all season and very lean in the back-end, consequently there was a smaller quantity of milk and less cheese. A poorly-fed milk cow always runs a greater chance of lung trouble. Cattle and sheep have been free from disease. *Clip of wool*—Quality of wool good and quantity about average.

GLASGOW DISTRICT.

AYRSHIRE. *Wheat*—45 bushels; 60 lb. per bushel; 25 cwt. straw; seed, 3 to 4 bushels. *Barley*—43 bushels; 55 lb. per bushel; 26 cwt. straw; seed, 3½ to 4 bushels per acre. *Oats*—50½ bushels; 41 lb. per bushel; 33 cwt. straw; seed, 4½ to 7 bushels per acre. *Harvest* about the usual time—in the end of August—and lasted till November; large quantity of grain was more or less damaged by exposure before it was possible to secure it. *Hay*—31 cwt. per acre (1½ cwt. less than last year); quality variable; where seeded, the seed is in many cases very light weight. *Meadow-hay* was also lighter than last season by 3 cwt. per acre; quality about an average. *Potatoes*—8 tons per acre (1 ton 5 cwt. less than last season); no disease of any consequence; no new varieties except for testing purposes. *Turnips*—22 tons per acre (2½ tons short of last season); crop brairded satisfactorily, and resowing had not to be resorted to except in a few cases; the dry summer was not favourable to rapid growth, but the mild autumn and winter tended to increase the bulk where the crop was left growing, which has been more general than usual. *Insects*—Oats suffered more than usual from grub and wire-worm, especially on land newly broken up. *Weeds*—Not more than usual: charlock, chickweed, groundsel, and other annual weeds; scarcity of labour tended to make weeding more difficult, and some land will require

more labour during next season. *Pastures* were heavily stocked early in the season, and the sunless summer did not encourage rapid growth after May. *Live Stock* throve only moderately, as in many cases a full supply was not available on the pastures. Cattle and sheep free from disease. *Clip of wool*—Under an average generally.

Bute. *Wheat*—Very little grown; an average crop, and well got. *Barley*—Very little sown; a good crop, and well harvested. *Oats*—40 bushels per acre; a good crop; 5½ bushels sown. *Harvest*—An early harvest, and early crops very well got; cutting began 20th August and finished last week of September; a very protracted and expensive harvest; some of the crop was out till November, but not nearly so bad as last year; a great want of harvest labour. *Hay*—A very light crop, 1 ton 5 cwt. per acre; secured in fine order. *Meadow-hay*—Very much lighter than last year. *Potatoes*—Commenced digging last week of June; a good crop; early sorts—those dug before 1st September—8 tons; late sorts, 10 tons; no disease; no new varieties planted; very wet weather when lifting late potatoes. Most of the potatoes planted in Bute are for early market. *Turnips*—Under average; they brairded well; no second sowing; from 20 to 25 tons per acre. *Insects*—No damage from insects. *Weeds*—On account of scarcity of labour and wet weather land was more difficult to keep clean, but no damage done. *Pastures*—Barely an average. *Live Stock*—Stock did not do so well as usual, owing to wet weather and want of substance in grass. Cattle and sheep free from disease. *Clip of wool*—A good average, and fine weather for clipping.

Arran. *Wheat*—None grown. *Barley*—Very little grown; say 36 bushels per acre; seed, about 4½ bushels. *Oats*—A good crop; much better than last year; grain, say about 36 bushels; the worst harvest on record; in fact, some fields were practically useless, want of labour and wet weather the cause. Soldier labour in many cases was of no use; seed sown, about 6 bushels per acre. *Harvest* began about usual time near the sea, but inland a little later; generally finished about 31st October. *Hay*—Say 20 to 30 cwt. per acre; quality not so good through broken weather, but seed parcels threshed well and got good prices, from 30s. to 50s. per cwt. and good quality. *Meadow-hay*—Not much grown; got rather broken weather while securing; less productive than last year. *Potatoes*—A very good crop; a full average; from 6 to 8 tons per acre; a little disease, but rather less than usual. *Turnips*—A fair crop; brairded rather badly, but when rain came did very well; filled up well in the back-end—say from 12 to 15 tons per acre: a little finger-and-toe; kept very clean; worst enemies were wood-pigeons. *Insects*—Damage less than usual; fly in some cases rather bad. *Weeds*—Damage less than usual, owing to dry weather in June. *Pastures*—Started rather bad, but when the rain came about the 15th of June, improved very much and finished well. *Live Stock*—Throve fairly well. Cattle free from disease; sheep very bad in early summer with fly, and back-end with foot-rot. *Clip of wool*—Better than last year, owing to the better spring.

Lanarkshire (Upper Ward). *Wheat*—None grown. *Barley*—Only small quantities grown. *Oats*—40 to 50 bushels; good quality; fully more grain than last year; 5 to 6 bushels sown. *Harvest* started generally third week in August, earlier than usual; weather broke third week in September, causing delay in securing, and a lot of grain damaged. *Hay*—About 1½ tons per acre; good quality, well got; less than last year. *Meadow-hay*—Much the same as last year, and fairly well got.

Potatoes—Less than last year; 6 to 10 tons; no disease; no new varieties. *Turnips*—18 to 25 tons; early sown turnips brairded well; later sown turnips brairded very slowly, and resowing required; some finger-and-toe. *Insects*—Caused greater damage than usual. *Weeds*—Owing to shortage of labour, weeds could not be kept down; damage greater than usual. *Pastures*—Below average growth and quality, due to drought in early summer. *Live Stock*—Did fairly well. Cattle and sheep free from disease. *Clip of wool*—Average.

Lanarkshire (Middle Ward). *Wheat*—Slightly inferior to last year; 30 to 40 bushels per acre; straw, 30 to 40 cwt.; seed sown, 4 bushels per acre. *Barley*—None grown. *Oats*—A large area of oats was affected with grub and eelworm. Where not affected the crop was slightly over the average, but owing to autumnal rains the quality of grain was partly damaged. Yield, 36 to 48 bushels; straw, 25 to 35 cwt.; seed sown, 5½ to 6 bushels per acre. *Harvest* started about the usual time, but much difficulty was experienced in saving the crops. *Hay*—Ryegrass and clover-hay was a medium crop, and was well got; from 25 to 35 cwt. per acre. Prices fixed by Government at £8 per ton, but liberty given to sell to consumers at a lower rate, which was from £6, 10s. to £8, according to quality. *Meadow-hay*—Timothy hay was a fair crop, and sold well. *Potatoes*—The crop of potatoes was small, and owing to the want of sunshine in the autumn did not finish well; have not been keeping well in the pits. *Turnips*—In the West turnips were exceptionally good, and in the early autumn swedes were being sold at about £5 per ton; later on, however, the prices fell. The yield would be from 15 to 25 tons per acre. No injury by insects. No injury by weeds. *Pastures* did fairly well during the season. *Live Stock*—All stock has been exceedingly high in price. Dairy cows up to £60 and £65, not being controlled. Fat cows and bullocks sold at controlled prices, ranging from 75s. per cwt. live-weight downward according to grading. Cattle and sheep free from disease. *Clip of wool*—No sheep in this ward.

Lanarkshire (Lower Ward). *Wheat*—35 to 40 bushels; quality fair; straw variable; 4 bushels seed. *Barley*—Limited quantity sown. *Oats*—55 to 60 bushels per acre; straw variable; 6 bushels sown. *Harvest* began about usual time; finished later than usual; unsettled weather at finish. *Hay*—About 2 tons; ryegrass good quality; clover under average. *Meadow-hay*—None grown. *Potatoes*—A good crop; little disease; many new varieties. *Turnips*—A full crop; 25 tons; quality good; more than one sowing in some cases. *Insects*—No injury. *Weeds*—No injury. *Pastures*—Average growth and quality. *Live Stock*—Throve well. Cattle and sheep free of disease.

Renfrewshire. *Wheat*—Average 37 bushels; grain good quality, though hardly up to usual; straw much the same as last year; not quite up to average weight; 4 bushels seed per acre. *Barley*—Very little grown. *Oats*—Average, say about 52 bushels; weight of straw somewhat lighter than last year, especially in the higher districts and on lighter lands; 5 bushels seed per acre. *Harvest*, as a rule, began much about the same time as last year; to begin with, weather was favourable, but before fields cleared much damage done by long-drawn-out broken weather, especially in higher or later districts. *Hay*—Good weather during the time of hay-making; quality and quantity quite up to an average of last few years. *Meadow-hay*—Very little grown; quality quite up to average but not quantity. *Potatoes*—Not quite as good as last year; 6 to 6½ tons fair average; very little disease; no new varie-

ties. *Turnips*—Were a very disappointing crop; quality and quantity much below that of last year; crop brairded badly, and, through drought and fly, resowing had to be done to a greater extent than has been the case for years. *Insects*—Turnips injured by fly. *Weeds*—For want of usual labour more dirty fields seen than was the case a few years ago. *Pastures*—Quite up to average, and quality better than last year. *Live Stock*—Throve very well. Cattle and sheep free from disease. *Clip of wool*—Good, fully up to the average.

Argyllshire (Lochgilphead). *Wheat*—None grown. *Barley*—None grown. *Oats*—A record crop as a rule, but very difficult to secure owing to being over-ripe and badly laid before being cut; straw very bulky, and mostly of poor quality; a great deal of grain lost through shedding; seed sown, 5 to 6 bushels. *Harvest* began about usual time, but very protracted owing to wet weather. The two last harvests are the worst within living memory, several fields in the district never being cut. *Hay*—Crop light; from 1¼ to 1½ tons per acre. *Meadow-hay*—Not so heavy unless where well dressed; a good deal lost owing to wet weather. *Potatoes*—Hardly so heavy as last year; possibly about 6 tons per acre; not much disease; no new varieties. *Turnips*—Crop not so heavy; possibly about 18 to 20 tons; very long in coming to the hoe owing to fly attack; a few cases of second sowing. *Insects*—Not much injured by insects except the green-fly at brairding; but very much damaged by wood-pigeons afterwards. *Weeds*—No damage done. *Pastures*—Luxuriant, but too soft from excessive rainfall. *Live Stock*—Have done better, with less flow of grass. Cattle and sheep free from disease. *Clip of wool*—About an average; quality of clip very good, and weight a good deal better than last year.

Argyllshire (Kintyre). *Wheat*—Very little grown, but what was grown was very good; about 40 bushels. *Barley*—Much better than last year, and mostly well got; from 40 to 50 bushels; seed sown, about 4 bushels. *Oats*—Very good crop; quite as good or even better than last year; but a big lot lost owing to the bad harvest, which was about the worst on record; seed, 5 bushels. *Harvest*—Began about the usual time, but was very protracted, even worse than last year, some of the parts affected by grub being very late of cutting. *Hay*—Rather better than last year, and well got; fully 2 tons per acre. *Meadow-hay*—Fully better than last year; earlier cut well got, but a good deal of the later crop spoiled. *Potatoes*—Fully better than last year; very little disease; from 6 to 10 tons per acre. *Turnips*—Fine crop all over; better than last year; brairded well; no second sowing; from 20 to 30 tons per acre. *Insects*—Oats badly spoiled by grub; damage greater than usual; no other damage by insects. *Weeds*—No damage. *Pastures*—Fully better than last year. *Live Stock*—Throve quite well. Cattle and sheep free from disease; more braxy with hoggs than most years, but otherwise sheep did well. *Clip of wool*—A good average.

Argyllshire (Islands of Islay, Jura, and Colonsay). *Wheat*—None grown. *Barley*—Practically none grown. *Oats*—The crop was a fairly good one, but owing to incessant wet weather for several weeks during harvest great injury was caused, resulting in damaged straw and grain, with a very poor yield of the latter. *Harvest* began on an average a fortnight to three weeks later than usual. *Hay*—Similar to last year. *Meadow-hay*—Similar to last year. *Potatoes*—Good crop; about 8 tons per acre, and free from disease. *Turnips*—Not up to the standard of last year; 17 to 18 tons per acre; growth was slow at brairding time;

dry weather necessitated second sowing on some farms, and all over the quality of the crop was inferior to that of last year. *Insects*—No damage. *Weeds*—No damage. *Pastures* were of average growth and quality. *Live Stock*—Did very well, but not quite up to last year. Cattle and sheep free from disease. *Clip of wool*—Similar in quality and weight to the last few years' clip.

STIRLING DISTRICT.

Dumbartonshire (Upper). *Wheat*—None grown. *Barley*—None grown. *Oats*—Fully an average crop; about 32 bushels per acre; seed sown, 5 to 6 bushels per acre. *Harvest* began about the usual time, and those that were early secured the crop in good order, but in a number of cases where resowing had to be done, owing to grub, some of the crop was never cut. *Hay* was lighter than last year; quality good; about 30 cwt. per acre, or rather less. *Meadow-hay* was lighter than last year, and was spoiled by bad weather; a lot was not cut at all. *Potatoes*—Lighter crop; about 5 tons; little disease. *Turnips*—Very much the same as last year; about 18 to 22 tons; crop brairded well; no resowing. *Insects*—Grub was very bad in lea oats; some fields had to be almost completely resown. *Weeds*—No injury. *Pastures* were barely an average; owing to the sunless summer they did not stand eating in the back-end. *Live Stock* throve well. Cattle and sheep free from disease. *Clip of wool* was fully an average, both in quantity and quality.

Dumbartonshire (Lower). *Wheat*—About 36 bushels; grain and straw good; seed sown, from 3½ to 4 bushels per acre. *Barley*—Little or none grown. *Oats*—About the same as last year—42 bushels; seed, 5 to 6 bushels per acre. Early stacked oats very good quality; late lots suffered a good deal in quality owing to the weather. *Harvest*—About the usual time. *Hay*—About 32 cwt.; not so firm quality as last year. *Meadow-hay*—Very ltttle meadow-hay got in good condition. The second year in succession of very bad weather for securing the meadow-hay crop. *Potatoes*—About the same as last year (6½ tons); quality not so good; no disease to speak about. *Turnips*—About 20 tons per acre; quality not so good as last year; crop brairded well. *Insects*—Some of the hay stubble and lea oats suffered from grub or wire-worm; damage greater than usual. *Weeds* did not do more than average damage. *Pastures* were not so good as in 1917. *Live Stock* throve fairly well. Cattle and sheep free from disease.

Stirlingshire (Western District). *Wheat*—None grown. *Barley*—None grown. *Oats*—About 42 bushels; seed, 5 bushels; grain and straw of good quality where early got, but the later secured crop suffered a good deal of damage from wet weather. *Harvest* began 27th August—about one week earlier than last year—and was mostly finished by end of October, but in some cases it was near middle of November before the ingathering was completed. *Hay*—About 1 ton 2 cwt.; fair quality; not very strong grown; about 8 cwt. less than last year, and with less clover. *Meadow-hay* much the same as last year. *Potatoes*—Average about 6 tons per acre, or 2 tons less than last year; very little disease at digging-time; kept fairly well in pits; no new varieties planted. *Turnips*—20 tons per acre or thereby; fair quality; did not braird too well; on many farms two and three sowings were rendered necessary by prevailing dry weather. *Insects*—Very little damage; not more

than usual. *Weeds*—A little redshank, but not above the general average. *Pastures* suffered from drought in early part of season; much the same as last year, but did not recover to the same extent. *Live Stock* did fairly well. Cattle and sheep free from disease. *Clip of wool*—Average quality, and slightly heavier than last year.

STIRLINGSHIRE (Eastern District). *Wheat*—44 bushels; good quality grain and straw; seed, 3½ bushels per acre. *Barley*—32 bushels; grain good quality; average straw; seed, 3½ bushels per acre. *Oats*—40 bushels; good average crop; straw good; seed, 4 bushels per acre. *Harvest* about the usual time; very good weather the first half, latterly it was very bad. *Hay*—Ryegrass and timothy hay rather under an average crop, but well secured; ryegrass, 30 cwt.; timothy, 38 cwt. per acre. *Meadow-hay*—Average crop; fairly well secured. *Potatoes*—Fairly good average crop; about 8 tons per acre. *Turnips* under the average; in some cases they were a failure. No damage by insects. *Pastures*—Average growth and quality. *Live Stock* throve quite well. Cattle and sheep free from disease. *Clip of wool*—Good average clip.

CLACKMANNANSHIRE. *Wheat*—Where the seed was got into the ground in good time the crop was a full average, but late sown did not do well, the ground being kept wet for weeks on end; average yield, 34 to 40 bushels per acre; 3 to 4 bushels sown. *Barley*—A less area sown; the crop was a bare average, and not so good as last year; grain was damaged in harvest by rain. Average yield from 35 to 38 bushels; 3½ to 4 bushels sown. *Oats*—On heavy land a good average, but on light soil was not so good as last year; damaged by rain in harvest; yield, 42 to 50 bushels per acre; 4 to 5 bushels sown. *Harvest* was about a week later in starting than last year, and was long in being finished owing to wet weather and want of harvest hands. *Hay*—Not so bulky as last year, averaging 35 to 45 cwt. per acre; early cut hay was secured in good condition, but late harvested hay was damaged by rain. *Meadow-hay* was not secured in good condition, and was not so good as last year in quantity or quality. *Potatoes* were under last year's average in quantity, being from 6 to 8 tons per acre; good quality; no disease to speak of; not many new varieties planted. *Turnips*—A fair good average on a few farms, and on many others almost a complete failure; no true estimate of quantity can be given, the crop varied so much owing to very dry weather in the month of June; the drought set in at sowing time preventing the seed from brairding well. Second and third sowings in a good many instances were tried with very indifferent results; those who did with one sowing had the best crop. *Insects*—The oat crop was damaged to some extent in spring by grub. The turnip fly did not damage the turnip crop so much as the dry weather in June. *Weeds* were not so troublesome in the early part of the season, but after the weather broke in August the soft weeds were more difficult to keep under than usual owing to want of labour. *Pastures* were of the usual growth until the middle of the season; they suffered a good deal from the drought in June; towards the end of the season there was a good supply for stock. *Live Stock* in general throve well on grass. Cattle and sheep were free from disease. *Clip of wool* was a fair average one in quantity—a little better than last year—and the quality good.

PERTHSHIRE (Western District). *Wheat*—A good braird; straw and grain a good average; yield, 36 to 40 bushels; seed, 3 to 3½ bushels. An increased area sown; crop secured in excellent order. *Barley*—About average area sown; quantity and quality of grain a full average;

straw rather short; yield, about 30 to 32 bushels; seed, 3½ to 4 bushels. *Oats*—A much larger area sown. Straw was less than average in quantity, but yield of grain was fully an average—36 to 40 bushels; seed, 4½ to 5 bushels. The crop was not all secured in good order, as the weather broke down when half had been secured. The crop secured early threshed out well, and a good sample. *Harvest* began practically at same time as 1917. *Hay* crop was below average in bulk; some of it was not well secured. On some dry field farms the hay was scarcely worth cutting. *Meadow-hay*—About the usual—but on hill farms the yield would be deficient in quantity and quality. *Potatoes* were grown on a large area, and the crop was a full average; not well secured on account of wet weather. *Turnips*—The turnip crop was not good, and in fact at one time looked as if it would be a failure, but open weather in autumn helped the growth. The yield was still far under the average; some resowing was necessary. Practically no damage from insects. No injury by weeds. *Pastures*—Old grass land did well, but pastures in regular rotation were pretty much a failure. *Live Stock*—Stock generally did not graze up to the average of former years. Cattle and sheep were free from disease. *Clip of wool*—Average quality; but quantity would be fully as good as former year.

PERTH DISTRICT.

Fifeshire (Middle and Eastern District). *Wheat*—Yielded a somewhat similar return to last year, averaging 40 bushels per acre; was longer in stook, due to weather and labour difficulties—and some loss, due to freedom of head, occurred in transit from stook to stack. Yield of straw an average; seed, 3½ bushels per acre. *Barley*—A field of "Plumage Archer" yielded $\frac{5}{6}$ quarters, with 21 cwt. of straw per acre; average yield, 41½ bushels per acre; on account of dry weather, parts of some fields, on thin land, were *hose-tied;* a good average crop on good land; acreage considerably decreased; seed, 3½ to 4 bushels per acre, according to variety. *Oats*—A full average crop, but generally not equal in quality to last year; some second growth, owing to drought, occurred on thin land; average yield, 57 bushels per acre; usual seeding from 4 to 6 bushels per acre. *Harvest* was a little earlier than last year, lasting five weeks, and in some places longer; considerable difficulty experienced at ingathering through scarcity of skilled labour. *Hay*—A good crop as to bulk and quality, averaging 40 cwt. per acre of ryegrass, and 46 cwt. per acre of timothy, with an aftermath of clover better than usual. *Meadow-hay*—Where grown—a similar crop to last year. *Potatoes*—The average yield all over would be about 7 tons of ware per acre, of good sound quality; some of the softer varieties, however, have not kept well in the pits. *Turnips*—A very disappointing crop, unless where sown early; some fields were resown three and four times; yield from 8 to 22 tons; general average, 15¼ tons per acre. *Insects*—About the usual damage by wireworm and cobb to grain and potatoes. *Weeds*—Where the work was carried through early and timeously, weeds were kept under control—where otherwise many foul fields could be seen. *Pastures*—Of average growth and quality; grazing stock satisfactory. *Live Stock*—Very little disease, and no cases of horse sickness in this district. *Clip of wool*—A full average clip, turning out rather heavier than last year.

Fifeshire (Western District). *Wheat*—Good quality, yielding 34 to 40 bushels per acre; straw of good quality; may be estimated at 25 cwt.

per acre; seed, 3½ to 4 bushels per acre. *Barley* yielded well on the lower districts, and may be estimated at 36 to 44 bushels per acre. Straw on deep lands of average yield and quality, but on the high lands the barley crop suffered from drought. Seed, 3 to 4 bushels per acre. *Oats* were likewise good in quality; yield, 48 to 60 bushels; some discoloration and sprouting was noticeable as the harvest advanced, due to bad weather; straw of average quality, but lea oats would be light of straw; seed, 4 to 6 bushels. *Harvest* began about the first week of September, and was well in hand at the beginning, but towards the latter end of September the weather broke, and on late farms the crop was secured with difficulty. *Hay* crop varied according to locality, but on an average would yield 2 tons per acre, and was secured in good condition. *Meadow-hay* of average yield. *Potatoes* were a good crop, yielding 6 to 8 tons to the acre. The tubers were free from disease. Reports of the newer varieties are satisfactory—that they are yielding well over an average. *Turnips* were the worst crop of the season, and probably the worst on record; a few fields yielded well, provided they were sown under favourable weather conditions. The yield may be anywhere between 5 and 15 tons or more. The late frosts and scorching sun withered the braird, and the seed had to be sown in many cases for the third and fourth time. *Insects*—No reports of insect pests. *Weeds*—Crops generally were free from weeds. *Pastures* were of average growth, but high lands suffered from want of moisture during June and July. *Live Stock*—Stock, despite the dry season, did well on the pasture. No reports of disease. *Clip of wool*—Wool clip of average weight, and good quality.

Note.—Flax has been grown on some farms in this district with encouraging results, under the control of the Board of Agriculture. On suitable lands the crop, unthreshed, will yield 2 to 2½ tons per acre.

Perthshire (Eastern District). *Wheat*—A heavy crop, but both grain and straw slightly damaged by bad weather; yield, about 40 bushels; seed, 3 to 4 bushels. *Barley*—Good average crop; yield, about 56 bushels; seed, 3 to 4 bushels. *Oats*—Very heavy crop; yield, about 56 bushels; seed, 4 to 6 bushels. *Harvest*—About usual time. *Hay and Meadow-hay*—Under average; yield, about 30 cwt.; quality good and well secured. *Potatoes*—Very good crop, but not so heavy as last year; yield, about 7 tons. *Turnips*—A very poor crop; brairded very badly and had to be resown in some cases two and three times; yield, about 14 tons. *Insects*—Wireworm did much damage to young turnip plants, and in some cases to grain also. *Weeds*—Not more than usual. *Pastures*—Under average; fairly good in the early summer, but of very poor growth afterwards. *Live Stock* throve fairly well. Cattle and sheep were free from disease. *Clip of wool*—Under average.

Perthshire (Central District). *Wheat*—The Central District of Perthshire is not a wheat-growing area, but notwithstanding this a great many farmers, during the past year, had a break of wheat. The crop, however, was not a heavy one—from 28 to 32 bushels. As a rule about 3 bushels to the acre were sown. *Barley*—The crop on the whole was good but the acreage was under the usual. The yield would be from 35 to 36 bushels per acre, weighing from 52 to 56 lb. to the bushel. *Oats*—A very large acreage was under oat crop and the yield was correspondingly good—from 33 to 35 bushels per acre. The weight would be from 41 to 45 lb. per bushel. *Harvest* began about the 20th August, and was finished by the end of September. The cereals were secured in very fine condition. *Hay*—The hay crop, on account of the backward spring, was under the average, and the consequence is that hay is scarce.

The control price is easily obtained for what is left, but as a rule farmers have had to consume the greater portion of their hay crop, as feeding-stuffs cannot be obtained. *Meadow-hay*—A large quantity of good meadow-hay was secured on the low-lying ground, but unfortunately on the high farms in the Ochils a lot of it was destroyed by wet weather. *Potatoes*—A very large break was under potatoes, and the crop was on the whole a good one. A quantity of the early potatoes was sold by auction, but the prices obtained were very disappointing. Those who planted middle and late varieties reaped a good harvest. In some places early potatoes were secured in wet weather and did not keep well. The yield would be from 9 to 13 tons per acre. *Turnips*—The turnip crop was under the average. At the end of August the crop was very disappointing, but during the latter portion of September and October the turnips did very well, so that most farmers will be able to pull their cattle through. *Pastures* on the whole were of average growth, and as a rule the stock of cattle and sheep did very well on them. Cattle and sheep were free from disease. *Clip of wool*—The wool clip was commandeered by the Government. It would be above the average, and the quality was good.

Perthshire (Highland District). *Wheat*—None grown. *Barley*—Scarcely any barley sown, and any sown yielded a poor return, both in grain and straw ; about 32 bushels. *Oats*—A fair average crop, although the straw was shorter than the average ; all well got ; 46 bushels on ordinary land, but on old leas ploughed up 48 bushels ; clean land, 34 bushels. *Harvest* began fully later than usual—about the 15th September. *Hay*—Much under the average, both as regards ryegrass and clover, but all well got ; about 1 ton per acre, and no aftermath or second crop. *Meadow-hay*—A poor crop all over, but in glens and high altitudes not half a crop ; very late and badly got. *Potatoes*—Not such a prolific crop as last year ; about 7 tons, with less ware and more seconds ; no disease, but on low-lying lands suffered from early frost in September, which left the quality soft ; no new varieties planted. *Turnips*—Under an average crop in quantity, and smaller in size ; 14 tons ; crop brairded very well, but slower in coming to the rough blade and the leas ; a little second sowing required in places, owing to cold and frost more than to fly. *Insects*—No damage from insects. *Weeds*—No damage from weeds ; owing to the dry spring, the land was well cleaned with a good tilth. *Pastures*—The pastures were a fair average ; early grass, and of good quality, with a good autumn growth. *Live Stock*—All kinds of stock did well, but feeding stock slow in coming to weight owing to the want of cake. Cattle and sheep free from disease. *Clip of wool*—Much above the average of the previous year, both in bulk and quality. There was no sheep-feeding required, and consequently all classes of sheep clipped above the average.

Forfarshire (Western District). *Wheat*—36 to 38 bushels ; good quality grain ; about 30 cwt. straw ; seed, 3 to 4 bushels. *Barley*—38 to 40 bushels ; threshing better than expected, and quite a good sample ; seed, 3 to 4 bushels. *Oats*—52 to 54 bushels ; good quality grain ; straw of fair quality also, unless where badly laid ; seed, 3 to 5 bushels drilled, and up to 6½ or 7 bushels broadcast. *Harvest* commenced earlier than at one time expected, but weather conditions were not of the best, and retarded operations considerably for a time, with the result that much of the grain was over-ripe. *Hay* somewhat lighter than last year, 32 to 36 cwt.—the bulk of it being secured in good condition, although there were exceptions. *Meadow-hay*—Little grown. *Potatoes*—6 to 7 tons, with little disease. *Turnips*—Generally a light crop, although they

improved immensely after beginning of October; vary much in weight, but should average 20 to 22 tons per acre; much second sowing, and instances of third and even fourth seeding. *Insects*—Weak turnip plants were a prey to insects. *Weeds*—Unless in turnips, no greater damage than usual to other crops. *Pastures*—Average. *Live Stock* throve very well. Not much disease amongst cattle or sheep, although one or two rather serious cases of joint-ill—or navel-ill—in lambs were heard of. *Clip of wool*—A good clip; about average.

ABERDEEN DISTRICT.

Forfarshire (Eastern District). *Wheat*—A very fine crop of both grain and straw, yielding about 44 bushels grain and 32 cwt. straw; seed, 4 bushels per acre; new varieties of the "Benefactor" type did not do so well as the older varieties. *Barley*—A variable crop, strong land doing well, but lighter soils not so good; grain an extra good yield in proportion to the straw; 40 bushels grain and 18 cwt. straw; seed, 3 bushels drilled, and 4 bushels sown broadcast. *Oats*—A very fine crop of grain on all really good lands, the new varieties running 56 to 60 bushels, with 20 cwt. straw. This crop was less damaged by "skellies" than for several years. Seed, 4 bushels of the old varieties, and 6 to 7 of the new; best results when sown 3 bushels with the rigs and 3 bushels across. *Harvest* commenced about 19th August—a week earlier than the average—and practically the same as last year; lasted six weeks, with much broken weather, but cold and rough, and there was no heating. *Hay*—Yield about 45 cwt. per acre of excellent quality; nearly a ton better than last year. *Potatoes*—An excellent crop of 7 tons per acre, but with a good deal of disease in certain varieties, the best and soundest croppers this season being "King Edward" and "Northern Star." *Turnips*—A very variable crop; on some farms brairding was excellent, with no trouble at all from start to finish, and with a yield of 25 tons per acre. On many other farms the braird was exceedingly bad, second and third sowing being required, with a very poor result of 12 to 15 tons per acre. *Insects*—No injury to either grain or roots by insects, with the exception of fields of very old lea, specially ploughed for additional cropping, where grub or other pests destroyed the greater half of the braird. *Weeds*—No injury by weeds. *Pastures*—Good pastures, especially during the second half of the grazing season. *Live Stock*—All stock, both cattle and sheep, throve very well on the pastures. Cattle and sheep free from disease. *Clip of wool*—Scarcely an average clip, but the quality of the wool was good.

Kincardineshire. *Wheat*—Not largely grown in Kincardineshire. A rather better crop than last year; from 44 to 48 bushels grain per acre, of good quality, with more straw than last year, of fair quality; 3 bushels seed where drilled, and 4 bushels sown broadcast. *Barley*—A better crop than last year; from 41 to 44 bushels of grain and 19 cwt. straw per acre, both of good quality; 3 bushels seed drilled in, and 4 bushels sown broadcast; some fine samples of barley, and the natural weight quite good. *Oats*—Quite a full average crop; yield, from 43 to 47 bushels grain, and 19 cwt. straw per acre, both of good quality; seed, 4½ bushels where drilled, and 6 bushels broadcast. *Harvest*—Fully a week later than last year. The weather was very good, and the most of the crop secured in excellent condition. *Hay*—Ryegrass and clover-hay were slightly under the average, and a portion of the crop suffered through the wet weather. Average weight, 22 cwt. per acre. The aftermath was generally rather poor.

Meadow-hay—Almost none in the district; no reliable information can be given as to crop. *Potatoes*—Quite a full crop, of excellent quality, but numerous complaints as to disease in certain varieties. Average weight about 7 tons per acre. *Turnips*—Great difficulty was experienced in getting the braird to hold, and with very few exceptions second and even third sowings had to be resorted to. The crop was a light one, of from 12 to 14 tons per acre. *Insects*—Little damage was done by insects; similar to that of last year. *Weeds* gave considerable trouble in the turnip crop, owing to the delay in getting the braird to hold. *Pastures* came early and good at the beginning of the season, but did not stand up so well later, and got very bare before the end of the season. *Live Stock* throve very well during the early summer, but the number grazed would be rather under the average. Cattle and sheep free from disease generally. *Clip of wool*—The clip of wool was above the average as to quantity, and of good quality.

ABERDEENSHIRE (Buchan District). *Wheat*—None grown. *Barley*—About 34 bushels per acre; straw, above an average; seed sown, 3 bushels per acre; quality slightly injured by wet weather. *Oats*—About 40 bushels per acre; straw above an average; seed sown, 6 bushels per acre. Quality damaged by wet weather in harvest. *Harvest* began about the usual time, but was protracted to six, eight, and, in some cases, ten weeks, owing to very unsettled weather. *Hay*—Ryegrass about 30 cwt. per acre; early hay secured in good order; any later hay suffered from continuous wet weather. *Meadow-hay*—None grown. *Potatoes*—6 tons per acre, as against 8 tons last year; secured in good order; no disease. *Turnips*—12 tons per acre, as against 18 tons last year. The turnip crop, owing to dry weather, night frosts, and the fly scourge, was a failure all over. Large tracts of this break were completely "blank." The fine open weather of the end of the season, however, improved the yield enormously, and, except for the "blanks," this crop turned out much better than was expected. *Insects*—Turnips greatly injured by "fly." Damage greater than almost any former year. *Weeds*—Not to any extent. The fine weather for getting turnip land prepared allowed weeds to be well cleaned out. *Pastures* were of average growth, but quality not equal to last year. *Live Stock* throve fairly well, but there were too many days of rain. Cattle never got a really dry bed to lie on all the later summer. Cattle and sheep free from disease. *Clip of wool*—Quality good; about the average yield.

ABERDEENSHIRE (Central District). *Wheat*—None grown. *Barley*—32 bushels per acre, 1 bushel less than last year; straw, 19½ cwt. per acre, 1 cwt. more than last year; the quality of both grain and straw was not so good as last year. The crop during summer months appeared to be quite up to last year's, but before harvest was much laid and not so well filled as 1917 crop. Natural bushel weight ranged from 50 up to 56½ lb., a large proportion weighing from 53 to 54 lb. Seed, 3 to 3½ bushels per acre sown with drill-machine, 4 bushels when sown with hand or broadcast machine. *Oats*—40 bushels per acre; same as last year; straw, 22 cwt. per acre, 1 cwt. more than last year; the quality of both grain and straw not so good as last year, no doubt for same reason as applied to barley. Natural bushel weight ranged from 38 to 46 lb., with a large proportion about 42 lb.; seed, potato oats, and all other thin-husked varieties, where drill-machine was used, 4½ to 5 bushels per acre; broadcast machine and hand, 6 to 6½ bushels per acre; all thick-husked varieties from 2 to 2½ bushels extra per acre. *Harvest*—Barley harvest began from 23rd to 26th August, about same time as last year. Oats harvest began from 26th to 31st August. All harvesting operations

were mostly completed by the 15th October—generally from 16 to 18 days later than last year. *Hay*—Average 27 cwt. per acre, 2 cwt. less than last year; the crop on an average was better mixed with clover than last year; the quality, however, was not so good; harvesting conditions were not so favourable as in 1917. *Meadow-hay*—Average 16 cwt. per acre, 2 cwt. less than last year. *Potatoes*—Average 8 tons per acre, 10 cwt. more than last year, with very little disease; no report of new varieties being planted; "Arran Chief" and "Iron Dukes" are still first favourites for general field crops, although many farmers still plant "Main Crop," "Lord Rosebery," "Langworthy," "Golden Wonder," &c. Quality very good—quite equal to last year. *Turnips*—11½ tons per acre, 7 tons less than last year. Seed brairded weakly and irregularly; third, and in some exceptional cases fourth, sowing had to be resorted to; frost and ravage by turnip fly were prevalent. The crop as a whole will turn out one of the poorest on record. *Insects*—Turnip crop very seriously injured, and to a much greater extent than in an average year. *Weeds*—No report of injury to crops by weeds. *Pastures* were quite of average growth, and better than last year *Live Stock*—All live stock did as well as reasonably could be expected under conditions prevailing in 1918. Cattle and sheep were free from disease. *Clip of wool*—Much about the same as last year, and about an average.

Aberdeenshire (Strathbogie District). *Barley*—The area devoted to barley has been upon a descending scale for a number of years past. This being a stock-breeding region, oat-straw is of greater value for fodder, hence the change from barley to oats. *Oats*—Owing to the pressure brought to bear by the Food Production Committee, a considerable extent of land, which had been a number of years in pasture, was ploughed and put under crop in the spring of 1918. The results were variable, in some cases profitable, but in others very unremunerative. On the whole, even at the high prices that obtained for oats, it is just possible that the operation would not be profitable. *Harvest* was not by any means late for the district, and the weather, although not of the best, was fairly favourable for reaping and securing the crops. Much of the crop was laid by winds and rain before harvest, and as a consequence reaping was slow, the machines working only on one side. *Hay* crop was not heavy. There was a general scarcity of clover throughout the district, which, of course, keeps down the weight; possibly 25 cwt. per acre may be given as an average crop. In the curing not a little of the earliest cut was damaged by rains, and thus rendered of little value for feeding purposes. *Potatoes*—The potato crop was good, and generally above an average weight, without any disease among the tubers; perhaps 7½ tons may be given as an average. "Arran Chief" is now the main crop potato. The old "Champion" has practically disappeared from cultivation. This variety held the field long, and was slow to yield to the "Chief." *Turnips* all over have been a most unsatisfactory crop, and on the whole are scarcely half an average. A considerable extent had to be sown a second time, and not a little a third time, before plants could be obtained. The trouble may be attributed to various causes. There was frost at night, with bright sunshine early in the forenoon. Thinning was thus protracted, but weeds were kept down, and the land was generally well cleaned. *Insects*—There were complaints of fly and other insects which destroyed the plants at an astonishing rate. *Pastures* did pretty well during the summer, but the season being on the cold side, cattle did not do so well as they would have, had the weather been warmer. *Live Stock*—There has not been any disease among either cattle or sheep. *Clip of wool*—The quality of the wool clip was good. There has been manifest

a great dissatisfaction among flockmasters that the clip has been commandeered, as they consider if a free market had prevailed they would have had a much higher price for wool. The cost of production is now much greater than in former years, so flockmasters argue that this circumstance should be taken into consideration in fixing a price for the product.

Banffshire (Lower District). *Wheat*—Practically none grown. *Barley*—44 bushels per acre. Quality of grain and straw not quite so good as last year, owing to wet harvest; 4 bushels seed per acre on light land, and 5 bushels on heavy land. *Oats*—52 bushels per acre. Quality of grain good, but colour not up to last year's sample; straw good, except where harvest delayed by wet weather; quantity of seed sown varies from 5½ to 6 bushels per acre—sown by broadcast machine. *Harvest* began about the usual time. *Hay*—1 ton 5 cwt. per acre, which is 5 cwt. per acre less than last year. The crop was deficient in clover, and the quality not up to last year, owing to wet harvest. *Meadow-hay*—None grown. *Potatoes*—About 7 tons per acre, as against 8 tons last year. There was no disease. The two new varieties planted last year—namely, Findlay's "Majestic" and "Kerr's Pink"—again gave excellent results. These varieties are immune from wart disease; enormous croppers, and table qualities excellent. *Turnips*—Quantity from 15 to 20 tons per acre, which is about 25 per cent less than last year. Quality not up to last year. The crop brairded well, but in most places "went off," and required to be sown two or three times, owing to frost and turnip "fly." *Insects*—The turnip "fly" did considerable injury to the braird of early sown turnips. Damage was much greater than usual. *Weeds*—All crops were more or less injured by weeds, as the land has become very dirty owing to lack of labour and so much extra cropping. *Pastures* not quite so good as usual. *Live Stock* throve well during the early part of the season, but fell away towards the end. Cattle and sheep free from disease. *Clip of wool*—Quality very good and up to the average.

Banffshire (Upper District). *Wheat*—None grown. *Barley*—Very small area under barley, as distilling is prohibited. The crop came away well, but the ripening period being somewhat dull and dark, the yield of grain was under an average, very little coming up to 4 qrs. per acre; seed, 4 bushels per acre. *Oats*—The staple cereal; general varieties, Potato and Early Hamilton. The seed season opened from 20th March, and was prolonged all through the month of April. The crops throve well, and were over average bulk of straw, but grain under average as to quantity and quality, good early farms coming to 6 qrs., but late ones are about 3 qrs. an acre. *Harvest* began about average date—generally on second week of September—but much interrupted by broken weather; crops were much laid and twisted, and cutting had to be done on one side with binders and reapers, and also resort to the scythe, in many instances, led to a very prolonged harvest period. *Hay*—A fair average, from 1½ to 2 tons per acre; a lessened breadth under hay owing to more of the older grass fields under cereals by Government orders. *Meadow-hay*—Not much, as it is required as pastures when the sown grasses give out. *Potatoes* were under last year's yield, but of good quality, and no disease to report; the common varieties are Sutton's Abundance, Main Crop, Up-to-Date, and Fortyfolds. *Turnips*—The turnip crop was the most unprofitable crop of the season; there was slowness in brairding, and a late start never made up; the crop recovered a little early in August, but with the cold showers during September growth held back, and the farmer who had half an average was counted lucky. *Insects*—No injury done. *Weeds*—The land was pretty well tilled in seasonable condition, and

weeds kept down, except in sour turnip fields, where wild mustard predominates. *Pastures* were kept pretty bare, as already mentioned, their extent being restricted by the ploughing up for cereals. *Live Stock*—Barely kept in average condition, and grazing cattle did not pay their way. Cattle and sheep free from disease. *Clip of wool*—Wool of average weight; sheep farmers complained of the marketing restrictions.

INVERNESS DISTRICT.

Morayshire. *Wheat*—Very little grown. *Barley*—About 36 bushels per acre, or same as last year; straw about 36 cwt. per acre, or 3 cwt. more than last year; weight of grain about 56 lb., or standard; colour moderate; seed sown, 3 to 4 bushels. *Oats*—About 40 bushels, or 4 bushels less than last year; straw, about 42 cwt., or 2 cwt. more than last year; quality of grain, fair to good; weight per bushel about standard of 42 lb.; quality of straw poor; seed sown, 5 to 8 bushels, according to variety. *Harvest* began about the usual time—early in August, but was continued much later than usual owing partly to the broken weather and partly to an extra area under grain, and the work having to be undertaken by soldier labour — mostly unskilled. *Hay*—About 32 cwt., or 2 cwt. more than last year; quality secondary; clover about the same as last year; not much secured in first-class order. *Meadow-hay*—Little grown; fully better than last year. *Potatoes*—About 6 tons, or 1½ tons less than last year; no appreciable disease. *Turnips*—About 16 tons, or 6 tons less than last year; quality good; a large number affected by rot; braird poor—good deal of second and even third sowing, with indifferent success. *Insects*—No serious damage. *Weeds*—Nothing special to complain of. *Pastures*—Good on the whole; fully better than last year. *Live Stock*—Well all season. Cattle and sheep free from disease. *Clip of wool*—Fully average, both as to quantity and quality.

Nairnshire. *Wheat*—None grown. *Barley*—Much as last year, 36 to 40 bushels; rather more straw; 4 bushels sown. *Oats*—More straw, but not quite so much grain as previous year—35 to 40 bushels; 5 to 7 bushels sown. *Harvest* began about same time as last year; rather earlier than usual. *Hay*—A good crop both of ryegrass and clover. *Meadow-hay*—None cut in this district. *Potatoes*—A fairly good crop—about 5 tons per acre; no disease. *Turnips*—A very poor crop—not more than half an average; much trouble with braird not coming; resown on some farms two and three times; grub was in evidence, and, consequently, crows preyed on the plants. *Weeds*—No injury. *Pastures*—Better than last year. *Live Stock* throve well. Cattle and sheep free from disease. *Clip of wool*—An average clip.

Inverness-shire (Inverness District). *Wheat*—Slight increase in acreage; about 38 bushels per acre; weight per bushel, about 60 lb.; straw, about 36 cwt. per acre; seed sown, about 4 bushels per acre. *Barley*—34 bushels per acre; weight, 52 lb.; straw, 30 cwt. per acre; seed sown, 4 bushels per acre. *Oats*—37 bushels per acre; weight per bushel, 42 lb.; straw, 30 to 32 cwt. per acre; seed sown, 5 to 8 bushels per acre—the latter figure for the new varieties. *Harvest* began about the last week of August. *Hay*—Less quantity, but good quality; average about 20 cwt. per acre. *Meadow-hay*—Less than last year; not much grown unless in the upper reaches of Speyside and round Fort Augustus, and greatly damaged by wet weather. *Potatoes*—Very fine crop, and good quality; 6½ to 7 tons per acre. *Turnips*—A very poor

crop, spoilt by drought at earlier stages, and in some cases by fly. *Insects*—Damage by insects to turnips. *Weeds*—Greater damage by weeds, owing to shortage of labour. *Pastures* slightly less growth, owing to June and July being too dry. *Live Stock* throve very well. Cattle and sheep free from disease. *Clip of wool* about average.

Inverness-shire (Skye). *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop, but owing to bad harvest the quality of grain and straw much inferior to last year. *Harvest* began about same time as last year. *Hay*—Ryegrass and clover-hay a light crop. *Meadow-hay* a lighter crop than last year. *Potatoes* were a small crop but free from disease ; no new varieties planted. *Turnips*, where sown before middle of June, were a good crop, but any sown after that were a failure ; no second sowing. *Insects*—No damage by insects. *Weeds*—No injury by weeds. *Pastures* were of average growth and quality. *Live Stock* did well. Cattle and sheep free from disease. *Clip of wool*—An average clip.

Inverness-shire (Lochaber). *Wheat*—None grown. *Barley*—None grown. *Oats*—1 bushel per acre more than last year ; grain and straw much damaged by wet harvest ; 6 bushels per acre is generally sown. *Harvest* began at the usual time. *Hay*—10 cwt. less than last year ; quality under the average of last year. *Meadow-hay* crop less productive. *Potatoes*—1 ton under the average of last year ; no disease. "Arran Chief" did well—10 cwt. over other varieties. *Turnips*—Average of last year. No injury by insects. *Weeds*—Crops injured by "Carron" weed ; less damage than last year. *Pastures*—Less growth than last year. *Live Stock* throve well. Cattle and sheep free from disease. *Clip of wool* an average.

Ross-shire (Dingwall and Munlochy). *Wheat*—More acres sown than usual ; crop good quality, but late-sown crops were frosted before being quite ripe ; yield about 32 bushels per acre ; seed sown about 3½ bushels per acre. *Barley*—A very fine crop and quite the usual area sown ; quality of grain and straw good ; yield about 40 bushels per acre ; seed sown, 3½ to 4 bushels per acre. *Oats*—Much larger area than usual sown, owing to demand for extra good production ; quality of grain and straw good, but some later crops badly damaged by rain at harvest time ; yield, 56 to 60 bushels per acre ; seed sown, 3 to 6 bushels per acre. *Harvest* began about the usual time, but owing to bad weather was very prolonged. *Hay*—About 2 tons per acre ; quality good. *Meadow-hay*—None grown. *Potatoes*—About 7 to 9 tons per acre ; a very fine crop, and mostly free from disease ; not many new varieties planted. *Turnips*—A very poor crop in most instances ; some early-sown fields of swedes and late sowings of yellow turnips turned out well ; average weight per acre—yellows, 8 to 10 tons ; swedes, 8 to 15 tons ; crop brairded well, but owing to frosts and "fly" a great many acres had to be resown—indeed, resowing was the general rule. *Insects*—No injury from insects except to the turnip crop. *Weeds*—Only the turnip crop, and as it was so poor the weeds flourished. *Pastures* were of average growth, but after the wet weather in harvest, stock ate them up and left very little grass for wintering. *Live Stock* throve well. Cattle and sheep free from disease. *Clip of wool* an average.

Ross-shire (Tain, Cromarty, and Invergordon District). *Wheat*—Average 28 bushels per acre, being 8 bushels less than last year ; straw fair quantity and good quality; grain bad quality ; seed sown, about 4 bushels per acre. *Barley*—Average 30 bushels per acre, being 6 bushels

less than last year; straw fair quantity and good quality; grain fair quality; seed sown, about 3½ bushels per acre. *Oats*—Average 56 bushels per acre, being same as last year; straw very good quality and medium quantity; some of the newer varieties of Garton's and Swedish oats up to 88 bushels per acre; quality of grain very good; seed sown, 4 to 6 bushels per acre, according to variety. *Harvest* began about the 20th August, same time as last year, about ten days earlier than usual. *Hay*—Average crop, 1 to 10 cwt. per acre, being 5 cwt. in excess of last year; quality fairly good. *Meadow-hay*—None grown. *Potatoes*—Average crop, 6 tons 10 cwt. per acre, being 1 ton 10 cwt. less than last year; practically no disease; new immune varieties planted were "Lochar," "Majestic," "Ally," and "Great Scot." "Lochar" produced big crops; "Majestic" were blanky, evidently not standing cutting well; "Ally" and "Great Scot" produced good average crops. *Turnips*—Average crop; swedes 11 tons and yellows 10 tons per acre, being under last year by 13 tons and 10 tons per acre respectively; crop brairded very badly, and the bulk of the crop had to be sown twice, and in some cases three times; the reason of this, I think, was frost and turnip fly. *Insects*—Grub did a certain amount of damage to oats in old lea land, and turnip fly did damage to turnips. *Weeds*—Owing to the war, and consequent shortage of labour, and also owing to so much cross-cropping, weeds were much more abundant than they used to be. *Pastures* were considerably under average growth and quality. *Live Stock* throve fairly well. Cattle and sheep free from disease. *Clip of wool*—About an average.

CAITHNESS-SHIRE. *Wheat*—None grown. *Barley*—The area under bere or barley was not extensive, and Prohibition will tend to lessen it. Small holders grew some for grain for feeding poultry to encourage egg-laying; yield about 33 bushels; seed about 4 bushels per acre. *Oats*—The acreage has increased under the Corn Production Act; old pastures were broken up for producing oats; yield, 3 to 10 quarters; average, 4 to 5 quarters per acre; seed, 5 bushels, or a little over where sown broadcast; where drilled about 3 bushels. *Harvest* began about the middle of September, which is not later than usual; strong winds about 25th August had bent the stalks of the oats towards the east, and this gave a "lay" which necessitated the cutting to meet this lay; the ground was exceptionally wet and ruts were made by the wheels. Influenza affected workers and released soldiers did great service. *Hay*—The hay crop was late in being cut, and the winds had made it difficult to cut. The weather continued wet. Saturday, 3rd August, proved the best day in the hay season; after that the crop was scarcely ever in condition to be put together, and some lay so long that deterioration could not be avoided; 2 tons would be the maximum yield. *Meadow-hay* was difficult to secure in good condition; frequent spreading was needed. *Potatoes*—The potato yield was very good and the quality excellent. Disease did attack the earlier kinds, and this spread even after lifting. "Champions" seem to be losing vigour, and new varieties, as "Arran Chief," are in demand. *Turnips*—Crop this year was largely a failure. Swedes and the early-sown yellows did best. The late sown were drowned with rains shortly after singling, and their yield, shaws and bulbs, would only be about 5 tons per acre. *Insects*—There was no great attack of grub or anything to complain of, except in some loose mossy ground where patches were quite bare. *Weeds*—Thistles, coltsfoot, corn marigold, and "souchers" are still prevalent and call for energetic and combined action. *Pastures*—Foggage was short. *Live Stock*—Feeding stuffs were not to be got, and every effort was made to get stock into condition on the pastures. Cattle and sheep — very occasionally anthrax occurs; "piners," through tubercle, are more numerous. *Clip of wool*—Average clip of wool.

ORKNEY. *Wheat*—None grown. *Bere* lighter in weight than last year; yields about 32 bushels per acre, weighing about 45 lb. per bushel; seed, 3½ to 4½ bushels. *Oats* were sown in latter half of April and first week of May, and, with the exception of some injury done by grub, the crop grew well at first, but a storm on 14th June injured the crop, especially along exposed sea-shores. The first half of July was fine, and all the crops improved, but a week of heavy rain followed, and the rest of the summer was very wet and all the crops suffered from too much water. Stormy weather during harvest shook some of the grain. Straw was plentiful; the average yield of grain was about 30 bushels per acre, weighing about 38 lb. per bushel; seed, 4 to 6 bushels. *Harvest* began about the third or fourth week of September, and owing to wet stormy weather and the bedded and tangled state of some of the crop, the binder was often unable to work, and much of the crop had to be cut with the manual reaper and scythe. With a shortage of hands and a larger area under crop this made a long harvest, but with some exceptions the crop was secured in fair order. *Hay* was a fair crop, but not much of it; weight about 23 cwt. per acre. *Potatoes*—Owing to the wet season and some disease potatoes were only about half the weight of last year; weight about 3 tons per acre. *Turnips*—Late sown turnips suffered much from too much water; average weight only about 9 or 10 tons per acre. *Insects*—There was some damage done to the oat crop by grub. *Weeds* injured some of the turnip crop, owing to the land being too wet to cultivate. *Pastures* were short, owing to less acreage under grass and the cold wet summer. *Live Stock* did not thrive well on the pastures. Cattle and sheep were free from disease. *Clip of wool*—The clip of wool was about an average.

SHETLAND. *Wheat*—None grown. *Barley*—None grown. *Bere*—A fair crop; grain below last year's average, but plenty of straw. *Oats*—Straw much more plentiful than last year, but grain lighter than last year; a good deal shaken by gales. *Harvest* began about usual time for Shetland; crops changed quickly owing to frost; the crops were very much twisted, owing to heavy gales, and had mostly to be cut by scythes. *Hay*—Much better crop than last year; the wet summer helped to rush on a good growth. *Meadow-hay*—Much better crop than last year—nearly double—but a bad season for getting it cured owing to wet weather. *Potatoes*—Not so good as last year; some cases a fair crop, where dry ground, but where ground was wet potatoes very small and soft; no disease; no new varieties grown. *Turnips*—Good average crop—as good as last year; no second sowing. *Insects*—No injury by insects. *Weeds*—The only weeds were charlock amongst corn, as is the case every year. *Pastures*—The pastures were of good average growth. *Live Stock*—Stock did very well, but did not put on the condition they did last year, owing to too much wet and want of sunshine. Cattle and sheep free from disease. *Clip of wool*—Quality of clip good, and better average weight than last year.

THE WEATHER OF SCOTLAND IN 1918.

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THIS report consists of (1) a general description of the weather over the Scottish area from month to month; (2) a selection of rainfall returns, in which each county in Scotland is represented by one or more stations. It is to be noted that all the temperature readings referred to are, unless otherwise stated, from thermometers exposed in the regulation "Stevenson Screen."

JANUARY.

The weather of the opening month of the year fell with unusual abruptness into two distinct periods, exceptionally rigorous conditions in all parts of our Islands, with easterly or north-westerly winds, giving place on 19th to an extremely mild south-westerly type of weather which persisted until almost the end of February. The coldest days were very generally the 7th or 8th, and the coldest nights about a week later, when readings below zero were reported. Thus on night of 13th-14th, West Linton registered −3°; on that and the following night, Eskdalemuir −1°; and on 15th-16th, Buchlyvie −2°, these being much the lowest readings of the year, and the lowest recorded in Scotland in January since 1910. The highest reading was 57°, at Gordon Castle on 26th.

Frequent and considerable precipitation from 6th to 19th was practically all in the form of snow, and from 20th to 24th or 25th rain was more or less general, whilst most eastern districts were rainless, or all but so, from 24th onwards. Towards north-west, on the other hand, there were very heavy rains from 26th to 28th, more than 2 in. at Fort William on 28th. In general, aggregates for the month showed a moderate to decided excess, though here and there, as at Braemar and Fort William, they were below the normal.

With a strong northerly wind or gale a severe snowstorm developed on night of 6th in many districts, with further heavy falls towards the north on 7th and 8th. After a partial thaw on 9th and 10th, another snowstorm was general on 11th, with some further heavy falls for some days thereafter, and on various days railway traffic in the far north was blocked. Early on 18th snow commenced to fall at Edinburgh and

elsewhere, and at Edinburgh a continuous twenty-four hours' fall gave a final depth of 10 to 12 in., but with mild conditions after 19th the snow quickly disappeared. From 24th to 27th winds from south-south-west reached gale force.

A thunderstorm occurred in South Ayrshire on the morning of 9th.

Sunshine amounts were as a rule deficient, though above the normal at Edinburgh and Glasgow, and from 20th to 24th there was much fog.

February.

The very mild southerly to south-westerly type of weather which had set in about 20th January persisted with but slight interruptions until almost the end of February, and taking a general view it may be said that whilst the mean temperature of the month was equalled at many places in 1914, a milder February has occurred in Scotland during the last sixty years only in 1882 and 1903. High night temperatures were especially noteworthy. At times during the third week a colder current of air from east and south-east was in evidence, and on 27th cold winds veering from west to north definitely marked the end of a prolonged spell of abnormal mildness. The extremes were 60° at Crathes on 23rd, and 25° at Leadhills on 28th.

With winds predominantly from west or south-west, the month's rainfall was moderate in the east, except in the Lothians, and deficient in the north-east. Elsewhere there was a considerable excess, amounting to at least 70 or 80 per cent over large areas in the west and north-west. At Glenquoich (19·92 in.) the month was the second wettest February during the last forty years, and has been exceeded in wetness only in 1903 (21·35 in.), and approached in wetness only in 1877 and 1911. Until 12th, conditions were generally wet except towards north-east, and between 15th and 25th some considerable falls occurred (2¾ in. at Gruline (Mull) on 17th, and about 2½ in. at Killin on 21st). At Kinlochquoich in the West Highlands a large part of the month's large aggregate of 23·91 in. was accounted for between 21st and 25th, the rainfall on the five consecutive days being 2·94, 0·95, 4·10, 0·42, and 2·40 in.

Winds were as a rule strong and squally, with a gale from south-east in some districts on 15th, and stormy south-westerly to westerly conditions from 21st to 27th. There was a good deal of snow around 21st, and on night of 27th a fierce northerly gale set in. On the forenoon of 28th snow fell heavily in eastern, inland, and northern districts, the conditions being

described by most observers as those of a "blizzard." Many trees were blown down, snow fell in places to a depth of 6 in., and in some districts there was drifting to a depth of several feet. In some western and south-western districts, on the other hand, no snow fell on low-lying ground throughout the month.

Thunderstorms were reported from one or two points towards the north and west around 9th, and on 27th or 28th.

Sunshine was deficient, and fog occurred around the middle of the month. At Aberdeen practically no sunshine was registered from 12th to 19th.

March.

The mean temperature of the month was somewhat above the normal, but this was due mainly to the influence of a week's spell of genial weather from 20th to 26th. Earlier, cold easterly and south-easterly winds were dominant, and during the last few days there was a definite return to rather cold conditions. The extremes were 65° at Perth on 22nd and 4° at Braemar on night of 1st-2nd.

The month was a very dry one nearly everywhere in our Islands, and April also was to prove very dry in both Scotland and Ireland. The March rainfall in Scotland was at many places very deficient, and wide areas had less than one-half, and considerable areas less than one-third, of the normal. In general, aggregates were largely accounted for during the last four or five days of the month, though, earlier, there was some precipitation in east from 1st to 5th, rather widely from 9th to 11th, and towards the north-west on 19th and 20th.

The gale and snowstorm of February 28th had expended itself on March 1st or 2nd, and there were some further slight snowfalls on 8th and on 28th or 29th. Wind was usually light in force, but squally around 8th and towards the end of the month.

There was a good deal of mist and fog, and sunshine amounts were as a rule much below the normal. At Aberdeen (72 hours) a cloudier March has occurred during the last thirty-five years only in 1909 (45 hours).

April.

The barometer had stood at a high level almost throughout the month of March. In April also pressure was for the most part high, with the result that a higher mean level for March and April combined has seldom been recorded in Scotland.

With winds mainly from north, north-east, and east, much cold weather was experienced, but during the fourth week of the month there was a considerable rise in temperature, especially in western and southern districts, and on 25th Fort William reached 72°. Lowest readings occurred as a rule between 12th and 16th, though here and there a few days later—as low as 20° at Kingussie on 15th, and at Leadhills on 15th and 21st.

The month was again a very dry one in nearly all districts, and a prolonged deficiency of rainfall was illustrated in an extreme form at Edinburgh (Blackford Hill), where the total rainfall for March and April was only 1·13 in., the smallest aggregate for these two months at Edinburgh since 1853. Practically the only rains of importance during April occurred on 1st and 2nd, from 5th to 8th, and on 19th and 20th; nearly everywhere the month's totals were largely accounted for on two or three days; and in most districts no rain fell after 20th. Over considerable areas the total rainfall was only one-third or less of the normal, and some places had only about half an inch or even less.

Snow and sleet occurred, except in western districts, towards the end of the third week. A fairly heavy fall on night of 19th-20th quickly disappeared.

Thunder and hail occurred here and there towards south-east and south on afternoon or evening of 2nd.

There was a good deal of gloomy weather, with some fog and mist, but the last week or so of the month was very sunny. In the west aggregates were considerably above the normal, and at Glasgow (Observatory) the month was the sunniest April since 1893.

May.

Judged by its mean temperature the month was the warmest May since 1911; there were, however, some considerable temperature fluctuations. Thus cold weather during the first two weeks was followed by very warm days until 22nd (when Ruthwell reached 82°, the highest temperature reported anywhere in Scotland during the year), whilst a thunderstorm on that day brought somewhat cooler conditions, with a return of high temperatures during the last three or four days of the month. On 23rd maximum readings were in many districts much below those of 22nd, a reading of 80° at Dumfries on 22nd being followed by a maximum of only 60° next day. The lowest reading was 25° at Balmoral, Banff, and elsewhere on 1st.

A fortnight's spell of all but rainless weather was broken on

3rd or 4th May, and between 4th and 6th there were some fairly heavy rains, with a three days' aggregate at Dundee of more than 2 in. A few fine days were again followed by broken weather from 10th to 17th, and from 21st to 25th an unsettled thunder-type prevailed with some fairly heavy local falls. The last few days of the month were nearly everywhere rainless. Relatively to the normal, aggregates varied greatly. Thus in most eastern districts there was a considerable excess —about 70 per cent at Dundee and Edinburgh—whilst at Aberdeen and in north, north-west, and south there was a deficiency.

There was a little snow, sleet, or hail at some points on 1st.

Thunderstorms occurred at various points on 4th, 5th, and 11th; fairly widely on 17th and 21st; very widely on 22nd; and sporadically on 23rd, 24th, or 25th. On 22nd a general and severe thunderstorm in the evening was preceded around the Firth of Forth and in some other districts by an afternoon storm of considerable intensity, with heavy falls of large hail in some districts of Fife. An observer at Methil described the hailstones as $\frac{3}{4}$ in. in diameter.

There was a good deal of gloomy weather, with some fog or mist, and in spite of some very fine days during the last week and around 18th, sunshine aggregates were mostly below the normal, and at western stations much below the amounts recorded in April.

June.

Warm days until 6th were followed by a three weeks' spell of cold weather, and both days and nights were unusually cold around 15th, and quite abnormally so for midsummer on 25th, when temperature at West Linton fell by night to 27°, with a reading of 24° from a thermometer exposed in the open. During the last day or two of the month there was a decided recovery, which was most marked in eastern districts,—as high as 81° at Crathes on 30th.

The month was a dry one in all parts of our Islands, and the first five and last ten days were in many districts of Scotland practically rainless. Somewhat changeable conditions between 6th and 21st resulted in rain of any importance on only one or two days, which largely accounted for the month's totals, and it may be said that over large areas conditions of drought were not effectively broken. In Orkney and Shetland and at some points towards the north-west aggregates were fully equal to the normal, but as a rule there was a serious shortage, and this was most marked in eastern districts from the Tay south-

wards, where many stations had less than ½ in. for the whole month, and most only about one-fifth or less of the normal.

On 13th a westerly gale was fairly general; and on 14th Ben Nevis was covered with freshly fallen snow to a level of 2000 ft. A thunderstorm with heavy hail occurred somewhat widely on afternoon of 15th, and minor thunderstorms here and there on 5th or 6th and around 20th.

After the first week, which was extremely sunny, there were many cloudy days, though a few very bright ones. Sunshine aggregates were for the most part rather above the normal, but deficient towards the north.

July.

The rise of temperature which had set in at the end of June was fairly well maintained throughout the first week of July, with 79° at Buchlyvie on 3rd. The second week, on the other hand, was exceptionally cold, and only once before (in 1884) has a reading as low as that of 28° at West Linton on night of 9th-10th been recorded in Scotland during the month of July. During the latter half of the month the day temperatures fluctuated considerably, being high on 17th, low around 21st, and decidedly high from 28th onwards, except in eastern districts.

A prolonged spell of very dry weather came to an end about 6th or 7th July, when rain became general, with some wet or extremely wet weather in most districts during the succeeding three weeks. A thunderstorm on night of 17th-18th brought heavy falls to east and north-east, as much as 1¾ in. at Perth, and from 20th to 24th there were heavy falls in east and north, about half the month's total of nearly 6 in. at Aberdeen being accounted for between these dates. The last few days of the month were practically rainless. Aggregates showed a moderate excess in south, west, and north-west, though here and there a deficiency (as at Fort William and Colmonell), whilst towards the north-east and north there was a notable area of excess, many places having at least twice the normal. In Orkney, and at Dunrobin, Ardross Castle, Braemar, and Aberdeen the month was the wettest July for at least sixty years. The very wet area had sharply defined western and southern limits: thus Braemar had more than twice the rainfall of Dumfries, and Dundee nearly twice that of Stirling.

Thunderstorms occurred more or less widely between 9th and 12th, and between 23rd and 26th. The thunderstorm, already noted, experienced in eastern districts on night of 17th-18th, was of exceptional intensity and came up with an

easterly wind. In some districts a minor storm occurred on afternoon of 18th.

Some very sunny days alternated with cloudy periods, and sunshine aggregates were fully equal to the normal towards the south and rather below it towards the north.

Much fog occurred in Orkney and Shetland between 15th and 25th, a little elsewhere around 21st, and some in the Firth of Forth at the end of the month.

August.

The month was marked by rather cloudy skies, and with consequent restriction of terrestrial radiation night temperatures were unusually high. Highest readings occurred on 10th or 11th (79° at Marchmont), though here and there on 20th; but except at these times the days were only moderately warm, and Scotland did not share in an unusual outburst of heat experienced in England during the third week. A sharp drop in temperature at the end of the month (37° at Crathes on night of 31st) was the precursor of a quite abnormal September.

Rather heavy rains occurred in south-west on 5th, and from 11th onwards at some points in the west rain fell on every day, though frequently the amounts were small. Heavy falls were experienced towards north-west on 22nd—1·60 in. at Stornoway; rather widely on 25th, with 1·52 in. at Dumfries, and as much as 2·32 in. at Ledlanet in Kinross-shire; and in north-east on 31st, with 1·65 in. at Wick. The falls of 31st brought the aggregates in northern districts considerably above the normal; and in the extreme north the month, following a July that had been the wettest on record, appears to have been the wettest August since 1889. Elsewhere, except in the Nith valley and at one or two other points, there was as a rule a slight to moderate deficiency, though considerable in Mid-Lothian and Berwickshire, where amounts were little more than half the normal. In most districts aggregates were largely accounted for on some three or four days—at Dumfries one-third of the total fell on 25th—and, generally speaking, there were few falls of much importance except around the dates indicated. The period from 6th to 15th was in many districts one of trifling precipitation, whilst the last week was in general the most unsettled of the month.

Some of the heaviest rainfalls were associated with a thunder type of conditions. Actual thunderstorms occurred at one or two points on 4th or 5th; in various districts between 10th and 12th; at one or two points in east on 18th or 21st; and rather

widely on afternoon of 25th. At many stations, however, there were none. Hail fell here and there on 31st.

Wind force was at times high, especially around 14th and 22nd.

Sunshine amounts were deficient, with some coast fog.

September.

The month of September 1918 will long be notorious for its coldness and wetness throughout the British Isles. In Scotland the mean level of the barometer was lower than in any September for at least sixty years, and the month was decidedly the coldest September for at least sixty years, though here and there it was approached in coldness in 1863. Moderately high readings were general on 6th and 7th (70° at Kelso), but almost throughout temperature remained at a low level both by day and night, and around the middle of the month the days were exceptionally cold, with easterly winds. Ground frost occurred at times in many districts, and on night of 14th-15th the thermometer in screen at Braemar fell to 23°.

In most districts the aggregate rainfall for the month was greatly in excess—more than twice the normal at Edinburgh and Glasgow and over considerable areas in south and south-east. In some of the wetter areas amounts were less than those of September 1908; but at Marchmont (Berwickshire) the month was the wettest September since 1891, at Cally (Gatehouse) the wettest since 1885, and at Glasgow the wettest since 1872. At Cargen the aggregate of 6·85 in. was equalled in 1885, but during the last sixty year exceeded in September only in 1869. Rather heavy rains fell in north-east on 1st, and, after three or four dry days, wet or very wet weather was general from 7th to 11th or 12th. A recovery proved quite temporary, and a severe rainstorm from the east set in on the afternoon of 15th, with more than 2 in. at Cargen, Eskdalemuir, and Wolfelee by morning of 16th, and more than 1 in. over wide areas. This rainstorm persisted for almost three days, with an aggregate at Eskdalemuir of 3·60 in., and of 2·73 in. at Glasgow (Observatory), of which about half fell on 16th. Towards the north amounts were less heavy. By 21st moderate to heavy rains were again general, and wet weather continued until almost the close of the month. In other parts of our Islands the month, as compared with the normal, was even wetter than in Scotland.

Winds were frequently strong and squally, especially around 10th, 21st, and 25th.

Thunderstorms occurred at various points during the first week; somewhat widely from 7th to 10th; and at one or two points on 17th, on 19th, or on some later day. Hail towards the end of the month, and here and there on earlier days. About the middle of the month fresh snow lay on the mountain-tops in the north, and on 28th Ben Nevis was covered down to the 2000-feet level.

Sunshine amounts were, except in the far north, slightly above the normal, mainly as the result of a few very sunny days.

October.

The very unstable type of weather conditions which had made September so noteworthy persisted during the earlier part of October, but the temperature record of the month was comparatively uneventful. The mean everywhere differed little from the normal, and at various places practically agreed with it. Highest readings occurred very generally on 9th and 10th (65° at Thorntonhall), and lowest readings as a rule on 13th or on 26th (21° at Logie Coldstone). With a southerly air current night temperatures were very high on 29th and 30th.

The first ten days of the month were in nearly all except some northern districts almost continuously wet, with some heavy falls towards south on 3rd, in west on 4th, and in west and north-west on 9th (as much as 2·89 in. at Fort William). Thereafter, until near the end of the month, rain of importance occurred only from 13th to 15th in north-west, somewhat widely between 17th and 19th, and on 24th towards north-west. At Fort William fully three-quarters of the month's aggregate of 11·33 in. was accounted for by 10th. Towards north-east and north aggregates were below the normal, and towards the south-east there was a trifling shortage. In west and south amounts were decidedly above the normal, by as much as 70 per cent in Renfrewshire, 60 per cent at Fort William, and at least 50 per cent very widely.

Very stormy weather prevailed from 5th to 7th, and again on 10th.

Thunderstorms, with hail at times, occurred somewhat widely on 7th, and here and there on 6th and 8th.

Sunshine amounts were decidedly below the normal. At Aberdeen no sunshine was registered from 17th to 22nd, and at Marchmont (Berwickshire) the aggregate of 55 hours was the smallest for October since 1889.

November.

Fairly high temperatures until 10th were followed by a cold spell lasting for about a fortnight. Thereafter there was a decided recovery of temperature, and late on 30th an exceptionally mild southerly current of air sprang up and dominated conditions during the earlier part of December. The extreme readings were 60° at Inverness on 2nd and 15° at Balmoral, Braemar, and Eskdalemuir Observatory on night of 19th-20th.

Conditions during the first ten days were extremely unsettled, with some heavy rainfalls in western, central, and southern districts, especially on 4th, on 7th (3·22 in. at Gruline in Mull), and on 9th (2·46 in. at Glen Etive); from 11th to 21st rainless or all but rainless weather was general; and during the last week or so of the month there were moderate falls on two or three days in most districts. At Fort William more than three-quarters of the month's rainfall was accounted for by 10th. In eastern districts, at Edinburgh, more than half the month's rainfall was accounted for by falls on 1st and 4th, and at Aberdeen nearly the entire month's rainfall was registered during the first week. In most western districts aggregates were above the normal, at Poltalloch by 70 per cent, but at Glasgow by only 10 per cent, whilst in north and east there was a fairly well-marked deficiency.

Very stormy weather was general on 2nd, early on 5th, and from 7th to 10th. On night of 7th-8th at Gordon Castle, in Morayshire, more than 5000 trees were blown down, and in Bute and elsewhere much damage was done.

On 5th thunder occurred here and there in west, and lightning rather widely.

From 11th onwards much fog occurred, very dense at times in the Firths of Forth and Clyde. Apparently the atmosphere was clearer around our northern coasts than elsewhere.

Sunshine aggregates were rather above the normal, and specially good in the Moray Firth area.

December.

The first week of the month was unusually mild in all parts of our Islands, and the second week also was decidedly mild. The highest reading reported was 60° at Glencarron on 4th and at Leadhills on both 12th and 13th, and such a level has seldom before been reached in Scotland in December. From the middle of the month onwards rather wintry conditions were in evidence at times, and on night of 25th temperature fell to 13° at Lednathie.

Precipitation was above the normal in south-west and extreme north, but elsewhere most districts experienced a moderate or well-defined shortage. The most continuously unsettled periods were at the beginning of the month, from 11th to 16th, and during the last few days; but the most general fall, largely accounted for by snow and sleet, occurred on 22nd, with more than 1 in. at Glasgow and Rothesay. In the east there were numerous days with little or no precipitation. At various points in west and north-west, on the other hand, there were only one or two "rainless" days, and at Rothesay none.

The weather was stormy around 23rd and 26th, and there were falls of snow and sleet, with hail at times, on 17th and on various days from 22nd onwards. At Balmoral and Braemar there was snow on the ground from 18th onwards, to a depth of 9 in. or 10 in. on 25th.

Thunderstorms occurred in Ayrshire on 16th and at Oban on 18th, and lightning here and there on various days.

Fog was comparatively rare, but occurred around 11th and 21st.

Sunshine aggregates differed little from the normal.

General Note.

The outstanding feature of the weather of the year was the very wet and cold character of the month of September. Many recent Septembers have had quite moderate rainfalls, and 1918 has been the first year since 1896 to experience a very wet September in all parts of our Islands.

Relatively to the normal, the rainfall aggregates for the whole year showed in some eastern districts a slight to moderate deficiency. In west and south-west, on the other hand, there was a fairly well-defined though moderate excess, and, roughly, about two-thirds of Scotland had a rainfall more or less above the normal. At the places referred to in the accompanying tables, taking a normal rainfall anywhere as 100 per cent, the totals for the year represent at, *e.g.*, Aberdeen 100, Marchmont 87, Glasgow 111, and Ardwell House 118 per cent of the normal.

[RAINFALL RECORDS.

Rainfall Records for 1918 in Inches.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Shetland—Lerwick	4·24	4·72	2·10	1·66	·84	2·07	2·70	3·47	3·36	3·72	3·21	4·30	36·49
Orkney—Deerness	3·39	3·23	2·02	1·72	1·48	1·97	5·24	4·77	4·20	3·32	3·00	6·64	40·38
Caithness—Wick	1·85	2·32	1·42	1·22	1·38	1·61	5·51	5·00	4·02	1·89	2·13	3·83	32·18
Sutherland—Tongue	4·17	2·86	1·96	2·26	1·75	3·00	5·67	5·28	4·91	2·66	2·47	4·64	41·63
Dunrobin	3·24	3·00	1·32	1·04	1·75	1·46	6·93	3·79	3·45	1·68	3·17	4·13	34·96
Dornoch	2·73	2·06	1·17	1·17	1·35	1·54	5·72	2·86	3·29	1·73	2·23	3·36	29·21
Ross and Cromarty—													
Fortrose	3·28	2·38	·83	·81	2·00	1·83	2·94	2·56	3·15	2·41	2·13	2·34	26·66
Ardross Castle	4·60	3·82	1·29	1·04	1·94	1·70	6·69	2·85	5·34	3·12	2·96	4·42	39·77
Glencarron	7·08	11·09	2·86	2·47	2·11	5·19	6·07	9·31	9·03	10·10	6·79	7·64	79·74
Stornoway	5·47	5·83	2·80	·95	2·13	3·31	4·76	6·84	7·21	5·67	5·24	5·83	56·04
Inverness—Inverness	2·74	2·45	·77	·95	1·78	1·57	4·95	3·18	3·19	2·76	2·02	2·43	28·79
Rothiemurchus	2·57	3·32	·72	1·63	2·19	·91	4·97	2·33	4·43	3·18	3·15	2·13	31·53
Kinlochquoich	10·88	23·91	4·43	2·69	3·16	7·11	9·58	16·53	17·31	20·62	15·93	13·77	145·92
Fort William	8·55	13·14	2·41	1·34	3·22	3·83	4·65	5·69	7·88	11·33	8·95	7·72	78·71
Nairn—Nairn (Delnies)	2·48	2·28	·71	1·42	2·17	1·85	5·51	2·28	2·68	2·09	1·81	2·50	27·78
Elgin—Gordon Castle	3·21	1·58	1·19	1·71	1·78	1·89	5·02	3·33	4·66	1·73	1·68	2·50	30·28
Grantown	3·14	2·34	1·10	2·04	1·59	1·87	6·25	2·34	4·31	2·73	2·04	3·30	33·05
Banff—Banff	2·81	1·13	1·17	·78	·95	1·52	5·80	3·00	5·03	2·19	1·68	2·56	28·62
Aberdeen—Fyvie Castle	5·01	1·16	1·61	1·00	1·90	2·54	7·48	3·10	4·91	2·23	1·05	2·72	34·71
Peterhead (Mains of Buthlaw)	5·22	1·25	1·34	·68	·95	1·95	5·12	2·78	5·88	1·93	1·34	2·54	30·98
Aberdeen (King's Coll.)	2·43	1·28	1·60	·43	1·85	1·37	5·92	2·71	5·20	2·29	1·91	2·39	29·38
Balmoral	3·18	2·74	·96	·86	2·11	1·02	5·52	2·00	4·59	3·03	2·98	2·34	31·33
Kincardine—The Burn	3·65	3·33	1·76	·71	4·08	1·24	6·82	2·44	3·36	2·80	2·71	5·70	38·60
Forfar—Montrose(Burgh)	2·68	2·00	1·57	·38	4·19	1·45	4·64	1·77	2·72	1·85	1·57	1·31	26·13
Dundee	2·01	1·95	1·09	·88	3·58	·81	5·54	2·26	3·85	2·75	1·63	1·65	28·00
Forfar	4·02	2·58	1·15	·91	3·46	·77	4·81	2·05	3·45	2·49	2·29	1·71	29·69
Lednathie	3·17	3·37	1·55	1·23	3·32	1·11	6·92	3·72	4·58	3·54	2·73	2·75	37·94
Perth—Perth	2·75	2·67	·99	·97	3·20	·34	4·67	3·58	3·88	3·51	1·60	1·59	29·75
Crieff	4·81	3·90	1·04	·90	2·84	·74	4·70	3·27	5·18	4·25	3·34	2·99	37·96
Killin	4·02	10·99	1·62	·65	3·09	2·73	5·30	3·30	6·73	8·38	9·34	7·57	63·72
Stronvar	7·80	13·13	2·65	1·42	2·96	3·65	3·75	4·20	8·03	11·62	9·49	7·33	76·03
Aberfoyle	7·70	8·20	2·00	1·40	3·20	1·75	3·50	3·25	6·75	8·10	7·40	6·30	59·55
Fife—St Andrews	2·08	1·96	1·00	·63	3·22	·64	3·33	1·87	4·23	2·28	1·42	1·48	24·14
Kinross—Loch Leven	2·66	4·12	1·12	·67	3·30	·39	3·73	2·06	4·44	3·35	1·82	2·47	30·13
Clackmannan—													
Alloa (House Gardens)	3·47	3·63	·93	·53	2·55	·40	3·02	3·69	4·43	3·68	2·30	2·75	31·38
Argyll—Gruline (Mull)	7·57	14·43	2·73	1·83	3·63	3·55	5·83	6·31	9·79	12·99	11·12	11·83	91·61
Oban	5·47	6·83	1·99	1·52	2·99	2·59	3·93	3·90	5·49	8·29	7·04	8·11	58·15
Glenorchy Manse	6·61	12·21	2·90	1·27	3·03	3·64	4·95	7·03	8·34	11·63	10·92	9·74	82·27
Ardrishaig	5·76	9·01	1·84	1·57	3·00	3·59	4·09	5·11	8·01	8·86	8·49	8·83	68·16
Campbeltown	5·29	7·47	2·02	1·14	4·10	1·69	4·77	3·82	7·80	8·20	8·95	8·28	63·53
Bute—Rothesay	5·74	7·43	2·39	1·39	4·37	1·83	4·16	3·89	6·23	7·49	7·76	7·18	59·86
Stirling—Kilsyth	7·27	6·85	2·26	·89	2·96	1·21	4·68	4·84	6·57	6·31	5·29	5·53	54·66
Falkirk (Laurieston)	4·28	5·33	1·35	·73	2·43	·58	3·23	2·50	5·38	4·80	2·85	3·37	36·83
Dumbarton—Dumbarton	5·47	7·43	1·62	·66	1·95	1·02	3·48	3·29	5·08	6·40	6·22	5·02	47·64
Renfrew—Greenock	7·23	10·53	2·63	1·06	3·84	2·05	4·43	5·16	7·47	9·59	9·34	8·17	71·50
Paisley	5·47	6·69	1·88	·80	2·13	1·12	4·13	2·71	6·65	6·59	4·87	4·89	47·93
Ayr—													
Kilmarnock(Agric. Coll.)	4·32	5·69	1·84	·69	2·07	1·27	2·90	3·71	6·53	5·53	3·75	4·58	42·88
Knockdon	3·77	5·10	1·32	·48	2·44	1·41	2·47	3·72	6·49	6·40	5·06	4·69	43·35
Colmonell(Knockdolian)	3·71	5·54	1·25	·70	2·83	1·93	2·92	3·70	5·11	6·80	5·71	6·49	46·69
Barr (The Manse)	4·09	6·38	1·33	1·12	2·54	2·10	2·89	5·11	6·00	6·67	5·15	5·76	49·14
Lanark—													
Glasgow (Observatory)	4·58	4·71	1·52	·47	2·50	1·08	3·59	3·00	6·42	5·24	4·04	4·21	41·36
Hamilton	3·82	3·82	1·27	·38	2·21	1·16	2·44	2·53	5·34	4·23	2·85	3·69	33·74
Mauldslie Castle	2·60	3·63	·60	·25	2·16	·70	2·24	1·80	4·09	4·36	2·68	2·46	27·57
Leadhills	8·72	9·69	2·76	1·28	3·76	2·69	3·79	4·98	9·27	8·13	7·58	7·93	70·58
Linlithgow—													
Bangour	3·15	3·49	·86	·78	2·78	·70	3·02	2·20	4·69	3·90	1·70	2·59	29·86
Mid-Lothian—													
Edinburgh (University)	2·46	2·57	·64	·73	3·29	·54	3·47	1·44	4·16	2·78	1·34	1·68	25·10
Balerno (Cockburn Hill)	2·81	4·02	·99	·94	2·90	1·34	3·32	2·01	5·24	4·72	2·61	3·01	33·91
Haddington—													
Gullane	2·26	2·85	1·06	·75	2·27	·38	3·96	1·97	3·70	2·22	1·35	1·38	24·15
Donolly (Reservoir)	3·57	2·30	1·25	1·95	2·78	·86	3·14	1·85	3·90	3·86	2·48	1·50	29·44
Berwick—Marchmont	2·73	2·31	1·23	·93	2·46	·47	3·14	1·81	5·72	3·59	1·32	2·26	27·97
Peebles—Glen	3·48	5·33	1·51	1·07	2·80	1·10	3·53	3·22	6·86	6·02	3·99	3·04	41·95
Selkirk—Selkirk (The Hangingshaw)	3·80	2·59	·45	·65	2·40	·44	4·04	1·73	6·28	2·70	2·94	2·06	30·08
Roxburgh—													
St Boswells (Fens)	3·62	1·76	·51	·55	1·99	·15	3·11	2·05	4·94	3·12	1·12	1·66	24·58
Branxholme	3·02	3·24	·59	·93	2·01	·66	2·53	1·94	6·03	4·64	2·60	2·12	30·31
Dumfries—Dumfries	4·68	3·91	1·54	·50	2·03	1·32	3·06	4·30	5·41	5·05	3·26	4·24	39·30
Drumlanrig	7·10	6·68	1·59	·63	3·00	1·12	4·08	5·61	7·29	8·51	6·16	5·58	57·35
Beattock(AuchenCastle)	7·12	7·92	1·89	·74	2·36	1·44	3·95	3·22	7·42	8·17	6·16	6·76	57·15
Langholm	6·81	6·25	1·75	1·00	2·90	1·08	5·99	5·41	8·81	6·51	3·64	5·32	55·47
Kirkcudbright—Cargen	5·93	5·56	1·91	·69	2·55	1·42	3·94	6·05	7·29	6·38	4·62	5·41	51·75
Dalbeattie (Kirkennan)	6·69	5·94	2·72	·92	2·35	2·02	4·49	4·19	7·01	6·92	4·31	7·24	54·80
Carsphairn (Shiel)	11·01	11·39	2·84	1·88	2·54	2·85	5·37	6·88	10·63	11·66	9·37	9·57	85·99
Wigtown—Ardwell H'se	4·07	3·92	1·24	1·08	3·55	1·95	2·34	3·54	5·92	4·24	3·72	7·50	43·07

AGRICULTURAL STATISTICS.—Returned upon 4th June 1918—(*Compiled from the Government Returns*).

Table No. 1.—Acreage under Crops and Grass in each County of Scotland.

Counties.	Total Acreage under Crops and Grass.*	Arable Land.	Permanent Grass.	Corn Crops.								Potatoes.	Turnips and Swedes.	Mangels.	Cabbage.	Rape.	Vetches or Tares (Seed).	Vetches, Tares, Beans, Mashlum, &c. (Fodder).	Small Fruit.	Rye-grasses and other Rotation Grasses and Clover.	Other crops.	Bare Fallow.
				Wheat.	Barley, including Bere.	Oats.	Mixed Corn.	Rye.	Beans.†	Peas.	Total.											
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acrs.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acrs.	Acres.	Acres.	Acres.	Acres.	Acres.
1. Aberdeen	628,513	600,193	28,320	28	21,173	228,885	343	125	16	90	250,660	8,056	78,396	..	140	29	71	1,853	227	260,425	223	113
2. Argyll	131,503	65,144	66,359	6	1,413	23,100	67	417	60	..	25,063	4,435	5,794	22	42	93	..	92	24	28,930	43	606
3. Ayr	314,961	159,955	155,006	2,110	418	56,593	159	179	879	6	60,344	11,435	8,257	647	258	284	2	5,696	201	72,539	154	138
4. Banff	159,294	150,047	9,247	9	6,523	57,661	179	52	63	28	64,515	2,092	19,390	1	6	..	69	651	18	63,215	21	74
5. Berwick	190,978	142,446	48,532	4,859	16,402	44,223	65	68	823	20	66,460	2,863	20,846	227	48	157	43	235	19	51,523	10	15
6. Bute	25,797	17,042	8,755	30	19	5,978	19	36	54	2	6,138	1,443	1,326	17	20	56	..	8	35	7,940	21	38
7. Caithness	107,531	84,224	23,307	..	1,189	35,645	43	11	..	..	36,888	1,621	11,920	..	15	2	6	245	3	33,455	3	66
8. Clackmannan	15,585	9,381	6,204	504	199	4,217	49	6	359	1	5,335	449	736	1	8	14	..	151	18	2,630	5	34
9. Dumbarton	47,777	26,865	20,912	1,062	43	8,980	41	1	112	1	10,240	3,187	1,511	19	82	71	..	322	53	11,323	18	39
10. Dumfries	248,190	143,530	104,660	119	394	57,284	164	24	107	4	58,096	5,520	13,448	295	105	138	2	177	71	65,552	57	69
11. Edinburgh	122,253	81,790	40,463	7,528	4,377	26,626	77	3	5	57	38,673	7,536	8,615	47	480	118	4	97	154	25,590	438	38
12. Elgin or Moray	99,083	92,407	6,676	1,083	8,003	31,137	95	384	8	1	40,711	2,126	13,698	11	14	1	32	197	16	35,478	21	102
13. Fife	246,207	179,269	66,938	15,113	12,532	54,422	395	904	405	33	83,804	18,358	20,543	..	98	136	44	456	230	54,034	1,336	228
14. Forfar	248,333	224,966	23,367	12,517	17,844	69,455	216	893	27	17	100,969	19,424	29,781	14	137	14	12	275	297	73,847	137	59
15. Haddington	110,148	90,771	19,377	8,086	12,384	22,895	33	..	191	89	43,678	8,201	12,112	355	509	126	9	75	239	25,046	405	16
16. Inverness	148,899	89,293	59,606	243	5,400	36,340	199	972	41	7	43,202	6,239	9,489	1	42	11	7	50	19	29,705	15	513
17. Kincardine	118,975	111,318	7,657	1,798	10,163	39,387	44	70	33	13	51,508	4,346	14,499	1	9	..	3	304	49	40,552	47	..
18. Kinross	33,948	22,852	11,096	320	226	8,935	116	80	4	2	9,683	1,435	2,240	3	15	42	..	41	17	9,324	48	4
19. Kirkcudbright	182,251	97,706	84,545	112	240	38,383	63	38	54	..	38,890	2,051	9,939	117	33	295	..	90	19	46,107	18	147
20. Lanark	250,364	144,709	105,655	3,256	266	52,421	245	31	122	3	56,344	7,363	9,676	40	548	447	8	1,449	1,808	66,442	436	148
21. Linlithgow	57,608	36,065	21,543	3,051	1,822	14,242	60	16	72	2	19,265	2,803	3,072	17	60	96	5	133	47	10,458	13	46
22. Nairn	25,478	23,791	1,687	6	1,828	8,309	31	41	..	6	10,221	322	3,767	9	1	13	2	13	6	9,390	14	33
23. Orkney	109,199	95,321	13,878	..	4,405	38,683	131	45	..	3	43,267	2,831	13,418	..	17	126	..	20	16	13,907	10	82
24. Peebles	50,391	27,403	22,988	3	297	9,303	..	..	..	1	9,604	541	3,167	..	91	293	10	614	2,460	84,284	4	1
25. Perth	329,806	241,943	87,863	9,042	4,705	92,103	436	723	1,098	5	108,112	21,436	24,044	47	162	30	1	396	94	17,427	51	501
26. Renfrew	84,776	41,003	43,773	2,334	46	13,780	90	11	152	3	16,416	3,999	2,344	41	92	26	72	157	28	40,335	63	30
27. Ross & Cromarty	137,808	112,383	25,425	1,949	7,298	39,376	428	428	8	11	49,498	7,839	13,880	32	87	85	7	87	33	47,552	16	408
28. Roxburgh	177,561	117,231	60,330	1,452	9,768	38,693	18	11	236	9	50,187	1,518	17,543	80	13	4	..	33	6	7,796	45	7
29. Selkirk	29,760	16,418	13,342	39	339	5,641	4	2	..	..	6,025	255	2,284	..	559	..	..	3	..	1,965	2	..
30. Shetland	28,459	14,628	13,831	..	950	7,209	39	..	..	..	8,198	2,332	1,060	..	75	118	8	983	165	20,138	8	503
31. Stirling	114,577	60,452	54,125	2,241	1,202	24,419	133	6	2,089	3	30,093	4,372	4,108	23	8	..	1	34	3	9,244	34	335
32. Sutherland	30,716	23,170	7,546	23	564	8,819	39	31	..	..	9,476	1,484	2,756	..	33	23	..	153	11	52,585	3	167
33. Wigtown	154,372	109,779	44,593	139	403	40,679	51	42	257	..	41,571	1,585	13,030	483	33						30	275
Total	4,761,101	3,453,495	1,307,606	79,062	152,835	1,243,823	4,072	5,650	7,275	417	1,493,134	169,497	396,689	2,552	3,820	2,848	424	15,273	6,381	1,354,290	3,749	4,82

* Not including mountain and heathland

† To be harvested as corn.

TABLE No. 2.—TOTAL PRODUCE OF WHEAT, BARLEY, AND OATS, ACREAGE and YIELD per Acre in the Year 1917, compared with the YIELD for the Years 1916 and 1915, and the AVERAGE of the Ten Years, 1907-1916, in each COUNTY of SCOTLAND.

COUNTIES.	WHEAT.						BARLEY, INCLUDING BERE.						OATS.					
	Total Produce in 1917.	Acreage in 1917.	Yield per acre.			Average of the Ten Years, 1907-1916.	Total Produce in 1917.	Acreage in 1917.	Yield per acre.			Average of the Ten Years, 1907-1916.	Total Produce in 1917.	Acreage in 1917.	Yield per acre.			Average of the Ten Years, 1907-1916.
			1917.	1916.	1915.				1917.	1916.	1915.				1917.	1916.	1915.	
	Qrs.	Acres.	Bush.	Bush.	Bush.	Bush.	Qrs.	Acres.	Bush.	Bush.	Bush.	Bush.	Qrs.	Acres.	Bush.	Bush.	Bush.	Bush.
Aberdeen	141	43	26.23	26.63	32.29	*31.02	79,614	19,657	32.40	27.76	34.07	33.73	896,317	193,825	36.99	32.61	37.39	36.69
Argyll	5	1	40.00	37.50	..	†26.21	6,530	1,381	37.82	38.02	39.33	38.35	82,466	19,035	34.66	33.53	34.10	34.15
Ayr	8,043	1,390	46.29	46.62	46.55	45.21	2,187	411	42.58	40.98	48.12	40.73	290,101	47,974	48.38	46.31	51.90	48.57
Banff	..	..	..	..	28.00	—	29,770	6,356	37.47	21.75	28.67	32.97	270,177	49,371	43.78	28.73	37.42	37.71
Berwick	8,023	1,809	35.48	34.80	36.99	38.39	66,642	17,357	30.72	30.42	32.34	34.81	155,131	32,988	37.62	35.82	37.95	37.81
Bute	36	7	40.57	41.87	45.50	*43.98	109	22	39.50	40.00	40.89	36.38	26,610	5,406	39.38	39.26	40.45	36.82
Caithness	..	..	..	..	..	..	4,968	1,219	32.60	28.56	32.10	29.79	138,053	31,855	34.67	29.11	32.21	31.38
Clackmannan	2,156	415	41.57	37.38	45.71	44.01	961	194	39.61	30.57	34.15	35.31	18,815	3,493	43.09	37.52	35.75	38.41
Dumbarton	4,241	846	40.11	36.70	39.01	36.74	139	34	32.76	36.85	34.13	33.20	44,396	8,440	42.08	40.22	44.54	41.80
Dumfries	413	88	37.50	39.16	42.06	38.52	2,077	450	36.94	37.96	35.43	37.50	223,339	44,622	40.04	38.00	37.65	35.65
Elgin or Moray	4,106	779	42.17	35.57	41.20	41.07	34,505	7,692	35.89	27.58	30.42	34.55	155,266	27,006	45.99	34.73	45.68	43.96
Fife	62,951	13,025	38.66	29.20	32.84	36.84	76,064	14,693	41.42	30.58	38.04	36.99	282,596	47,191	47.91	39.29	42.69	39.95
Forfar	39,500	8,981	35.19	34.53	36.07	37.79	92,575	20,893	35.45	32.66	32.45	36.42	395,470	59,027	53.60	51.84	51.77	49.52
Haddington	32,992	6,398	41.25	39.53	42.52	42.92	67,992	12,586	43.22	37.47	43.37	42.89	124,269	19,980	49.76	45.35	48.82	45.44
Inverness	998	193	41.35	36.46	39.48	38.66	17,180	5,367	25.61	23.00	22.33	27.39	128,539	31,685	32.45	27.79	28.36	29.31
Kincardine	4,420	944	37.46	35.93	38.86	36.30	45,105	10,581	34.10	30.42	32.16	32.37	159,109	31,546	40.35	36.62	38.86	38.48
Kinross	1,071	206	41.59	34.95	43.17	43.01	1,242	248	40.08	32.61	36.95	35.83	36,103	7,076	40.82	35.02	35.73	34.02
Kirkcudbright	137	32	34.13	33.74	42.03	37.27	770	157	39.26	33.86	39.70	37.08	133,912	27,920	38.37	35.39	37.33	36.41
Lanark	13,268	2,958	35.88	33.96	34.41	35.17	1,035	232	35.71	32.05	32.90	32.67	242,006	43,968	44.03	38.40	37.44	36.51
Linlithgow	14,078	2,678	42.06	40.64	43.57	43.40	11,330	2,077	43.64	38.49	43.67	43.11	70,628	11,439	49.39	42.63	47.18	44.17
Mid-Lothian	37,962	6,714	45.23	40.04	46.24	45.96	24,649	4,721	41.77	37.24	44.08	42.27	132,160	22,193	47.64	40.75	46.25	42.54
Nairn	..	..	..	..	36.00	†34.43	8,263	1,906	34.68	24.70	26.77	29.41	30,670	6,921	35.45	25.29	31.43	32.68
Orkney	..	..	..	..	..	..	18,090	4,333	33.40	31.52	28.36	31.67	129,784	34,361	30.22	26.96	27.64	29.51
Peebles	8	2	32.00	34.29	39.43	—	1,380	352	31.36	27.58	32.96	31.68	30,171	6,857	35.20	32.37	34.61	33.25
Perth	34,262	7,051	38.87	35.20	38.47	37.99	26,643	5,935	35.91	32.02	32.03	35.40	473,910	76,293	49.69	42.74	46.92	41.07
Renfrew	13,946	2,392	46.64	46.04	39.79	41.05	331	76	34.82	38.47	38.56	38.95	68,055	12,329	44.16	48.98	45.44	44.41
Ross and Cromarty	8,594	1,570	43.79	36.93	43.48	39.93	27,071	7,145	30.31	25.29	29.30	30.92	176,792	34,238	41.31	36.82	37.12	36.85
Roxburgh	1,916	467	32.83	31.04	34.18	35.47	44,019	9,908	35.54	30.13	33.99	35.64	153,417	30,100	40.78	35.43	37.97	38.51
Selkirk	45	9	40.00	..	35.40	‡32.90	1,284	282	36.43	31.78	34.01	33.05	22,233	4,441	40.05	35.76	37.29	35.86
Shetland	..	..	..	..	..	..	2,870	888	25.85	16.66	22.93	24.92	21,752	6,597	26.38	17.54	22.38	25.59
Stirling	10,386	1,836	45.26	40.02	38.64	45.30	5,696	1,122	40.61	39.13	37.33	40.72	108,284	21,762	39.81	36.59	37.60	39.65
Sutherland	..	..	..	28.00	..	—	2,331	564	33.07	32.87	31.10	32.62	36,012	8,246	34.94	33.41	30.92	34.33
Wigtown	471	97	38.28	39.86	41.72	38.41	1,366	296	36.91	36.40	40.28	39.21	190,388	33,158	45.93	34.05	42.30	39.20
Total	304,169	60,931	39.94	35.90	38.61	39.79	704,788	159,135	35.43	30.50	33.65	35.31	5,446,931	1,041,343	41.85	36.56	39.77	38.40

* Average of 8 years only. † Average of 7 years only. ‡ Average of 6 years only.

TABLE No. 3.—TOTAL PRODUCE OF BEANS, PEAS, AND POTATOES, ACREAGE and YIELD per Acre in the Year 1917, compared with the YIELD for the Years 1916 and 1915, and the AVERAGE of the Ten Years, 1907-1916, in each COUNTY of SCOTLAND.

COUNTIES.	BEANS.						PEAS.						POTATOES.					
	Total Produce in 1917.	Acreage in 1917.*	Yield per acre.			Average of the Ten Years, 1907-1916.	Total Produce in 1917.	Acreage in 1917.	Yield per acre.			Average of the Ten Years, 1907-1916.	Total Produce in 1917.	Acreage in 1917.	Yield per acre.			Average of the Ten Years, 1907-1916.
			1917.	1916.	1915.				1917.	1916.	1915.				1917.	1916.	1915.	
	Qrs.	Acres.	Bush.	Bush.	Bush.	Bush.	Qrs.	Acres.	Bush.	Bush.	Bush.	Bush.	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.
Aberdeen	4	3	9.33	31.00	33.92	25.39	27	20	10.86	20.99	26.46	19.33	61,950	7,464	8.30	4.64	6.97	5.87
Argyll	151	45	26.85	27.39	27.34	24.14	..	..	..	..	..	—	27,786	4,274	6.50	3.84	5.84	5.40
Ayr	5,404	1,175	36.79	36.15	35.49	35.70	..	..	..	36.00	39.00	‡35.91	96,532	10,058	9.60	8.13	8.98	8.88
Banff	152	40	30.41	24.00	25.96	29.36	44	18	19.58	18.00	22.76	23.06	12,886	1,896	6.80	3.40	5.85	6.14
Berwick	1,905	489	31.17	32.90	31.97	33.95	6	2	25.75	22.00	22.22	‡23.09	15,900	2,198	7.23	3.58	6.37	6.55
Bute	123	38	25.95	26.91	25.73	24.16	..	..	..	26.00	..	‡23.48	10,196	1,295	7.87	4.86	7.37	6.30
Caithness	..	..	..	..	..	..	..	..	..	..	..	..	8,770	1,554	5.64	2.97	5.01	4.51
Clackmannan	1,481	237	50.00	48.00	47.09	43.58	..	..	..	..	..	—	2,842	400	7.11	4.45	7.09	7.09
Dumbarton	169	40	33.93	33.21	33.20	30.07	..	..	..	24.00	..	§28.94	22,662	2,792	8.12	5.27	7.76	7.62
Dumfries	16	5	26.00	25.75	..	†30.70	..	..	..	..	..	—	32,603	4,354	7.49	5.65	7.75	6.80
Elgin or Moray	30	10	23.90	28.00	31.37	29.13	12	5	18.45	19.93	20.89	22.61	12,804	1,903	6.73	3.41	6.14	5.97
Fife	1,774	386	36.76	36.41	39.00	37.93	2	1	18.00	36.00	30.00	†31.14	111,264	15,629	7.12	3.24	5.64	5.46
Forfar	159	32	39.74	40.00	40.00	34.77	..	..	..	..	30.00	†31.79	126,934	16,288	7.79	3.52	7.19	6.55
Haddington	895	225	31.84	30.03	32.57	34.38	28	7	31.71	28.25	30.60	33.53	51,920	6,771	7.67	3.81	6.78	7.05
Inverness	..	..	..	..	..	†23.95	..	..	..	25.67	24.00	†24.90	28,922	5,927	4.88	2.18	3.97	3.61
Kincardine	136	30	36.00	30.42	34.40	33.09	..	..	..	20.00	..	†28.38	22,647	3,471	6.52	2.66	6.01	5.32
Kinross	..	..	..	39.00	..	†38.62	..	..	..	26.00	..	—	7,814	1,089	7.18	4.44	6.49	7.03
Kirkcudbright	89	22	32.27	25.30	37.33	37.96	..	..	..	..	..	§21.45	13,168	1,886	6.98	4.69	7.40	5.93
Lanark	563	139	32.33	30.75	30.62	30.68	..	..	..	24.00	24.31	†22.04	63,396	6,272	10.11	6.37	8.32	7.51
Linlithgow	252	55	36.65	24.00	36.11	33.99	..	..	..	..	30.00	¶31.26	19,015	2,351	8.09	4.31	7.99	7.41
Mid-Lothian	150	35	34.11	..	36.17	†32.51	17	4	33.00	32.47	31.20	31.29	52,991	6,618	8.01	4.15	7.57	7.28
Nairn	..	..	..	..	..	—	..	..	..	..	23.00	†27.60	2,008	300	6.69	2.25	5.00	4.51
Orkney	..	..	..	..	..	..	..	..	..	..	..	..	20,343	2,944	6.91	3.04	5.40	5.02
Peebles	..	..	..	..	..	—	..	..	..	..	30.00	‡30.05	2,973	366	8.12	4.43	6.94	6.54
Perth	5,253	995	42.23	30.35	33.95	30.59	3	1	24.00	..	22.00	‡17.75	133,677	17,434	7.67	3.36	6.95	6.61
Renfrew	391	81	38.65	41.84	41.67	39.65	..	..	..	..	..	..	29,526	3,590	8.22	6.43	7.58	7.27
Ross and Cromarty	15	4	30.00	28.00	32.00	31.69	..	..	..	21.30	24.67	23.03	42,054	7,398	5.68	3.16	5.37	4.27
Roxburgh	513	141	29.08	29.67	34.65	32.68	20	5	32.00	25.00	29.00	28.83	11,143	1,385	8.05	3.38	6.79	5.83
Selkirk	..	..	..	..	36.00	§32.33	..	..	..	25.00	32.00	—	1,674	215	7.79	3.42	6.58	5.48
Shetland	..	..	..	..	..	..	..	..	..	..	..	..	15,479	2,637	5.87	2.11	3.97	4.17
Stirling	9,279	1,726	43.01	40.20	37.92	43.27	..	..	..	26.50	27.29	32.88	27,873	3,944	7.07	5.25	7.17	7.28
Sutherland	..	..	..	..	..	—	3	1	24.00	22.33	21.00	‡22.81	8,596	1,541	5.58	2.66	5.06	4.97
Wigtown	775	182	34.05	31.90	43.11	36.93	..	..	..	..	..	..	11,737	1,473	7.97	3.70	7.66	7.19
Total	29,679	6,135	38.70	35.95	36.29	36.59	162	64	20.21	23.56	25.54	26.75	1,110,085	147,717	7.51	4.08	6.73	6.29

* Exclusive of a certain acreage, not ascertainable, the produce of which was cut green.
† Average of 9 years only.
‡ Average of 8 years only.
§ Average of 6 years only.
‖ Exclusive of 332 acres, the produce of which was cut or picked green.
¶ Average of 7 years only.

TABLE No. 4.—TOTAL PRODUCE of TURNIPS (including SWEDES) and MANGELS, ACREAGE and YIELD per Acre in the Year 1917, compared with the YIELD for the Years 1916 and 1915, and the AVERAGE of the Ten Years, 1907-1916, in each COUNTY of SCOTLAND.

COUNTIES.	TURNIPS AND SWEDES.						MANGELS.					
	Total Produce in 1917.	Acreage in 1917.	Yield per Acre.			Average of the Ten Years, 1907-1916.	Total Produce in 1917.	Acreage in 1917.	Yield per Acre.			Average of the Ten Years, 1907-1916.
			1917.	1916.	1915.				1917.	1916.	1915.	
	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.	Tons.	Acres.	Tons.	Tons.	Tons.	Tons.
Aberdeen	1,419,454	82,383	17.23	13.46	16.83	15.38	30	1	30.00	..	16.10	*13.22
Argyll	95,987	5,680	16.90	15.25	17.80	15.65	433	28	15.46	14.04	15.30	12.72
Ayr	177,916	7,531	23.62	20.60	20.95	20.12	12,655	531	23.83	21.34	24.60	21.70
Banff	479,846	20,333	23.60	11.93	17.56	15.51	240	8	30.00	13.50	22.00	12.56
Berwick	441,501	23,212	19.02	14.66	20.63	18.65	3,797	237	16.02	13.98	17.59	17.98
Bute	22,374	1,352	16.55	14.98	16.69	16.41	123	8	15.38	15.30	15.67	15.73
Caithness	241,576	11,996	20.14	15.03	18.85	17.77	..	..	..	..	..	..
Clackmannan	13,258	725	18.29	9.76	15.84	13.29	28	2	14.00	4.00	14.00	9.30
Dumbarton	33,509	1,487	22.53	18.60	21.39	20.12	369	14	26.36	18.75	20.27	18.40
Dumfries	283,422	15,186	18.66	16.26	17.03	15.28	5,787	305	18.97	17.97	21.99	17.79
Elgin or Moray	307,652	13,994	21.98	11.05	18.78	17.42	251	9	27.89	10.35	20·81	18.34
Fife	475,699	21,882	21.74	15.36	17.48	15.80	702	62	11.32	10.10	14.16	11.27
Forfar	731,971	31,555	23.20	15.26	21.75	19.41	420	21	20.00	18.40	24.70	21.82
Haddington	277,391	12,909	21.49	15.20	20.19	18.58	7,700	356	21.63	17.38	21.58	20.09
Inverness	163,392	9,395	17.39	11.33	14.43	14.64	45	3	15.00	6.50	14.00	12.46
Kincardine	261,617	15,717	16.65	10.83	15.48	13.62	..	..	..	10.00	..	—
Kinross	45,891	2,301	19.94	12.99	17.10	14.65	24	2	12.00	†—	18.00	—
Kirkcudbright	198,464	10,498	18.90	15.84	17.45	15.96	2,951	150	19.67	18.19	21.25	19.64
Lanark	224,933	9,720	23.14	18.41	19.81	18.26	269	27	9.96	6.60	7.22	7.06
Linlithgow	69,041	3,226	21.40	14.68	22.18	18.52	260	10	26.00	18.75	28.00	22.19
Mid-Lothian	195,659	9,158	21.36	14.37	20.73	18.42	832	39	21.33	13.58	21.71	20.20
Nairn	62,929	3,708	16.97	11.00	14.82	14.42	15	1	15.00	8.00	14.00	*14.01
Orkney	147,954	13,911	10.64	11.03	11.34	10.60	..	..	..	..	..	—
Peebles	66,648	3,107	21.45	15.83	18.45	18.72	..	..	..	18.00	18.00	‡18.71
Perth	499,936	24,648	20.28	13.87	19.13	17.69	968	41	23.61	18.79	17.21	17.18
Renfrew	40,739	2,165	18.82	17.22	18.13	17.58	737	33	22.33	14.30	17.26	15.48
Ross and Cromarty	261,807	14,515	18.04	14.25	16.78	14.79	357	20	17.85	16.00	18.84	15.56
Roxburgh	305,650	18,372	16.64	12.99	15.08	15.27	1,285	72	17.85	12.59	21.60	17.33
Selkirk	44,446	2,292	19.39	14.80	17.88	14.44	32	2	16.00	..	..	—
Shetland	13,350	1,081	12.35	8.32	13.36	12.07	..	..	..	..	..	..
Stirling	99,201	4,048	24.51	29.22	26.00	24.31	361	16	22.56	26.56	24.12	22.95
Sutherland	42,118	2,710	15.54	14.27	16.42	15.56	..	..	..	11.33	..	—
Wigtown	307,829	13,508	22.79	16.45	17.16	16.46	12,028	417	28.84	26.96	26.94	21.66
Total	8,053,160	414,305	19.44	14.23	17.89	16.41	52,699	2,415	21.82	18.85	22.20	19.22

* Average of 8 years only. † Crop failed. ‡ Average of 7 years only.

TABLE No. 5.—TOTAL PRODUCE OF HAY from Ryegrass and other Rotation Grasses and Clover, also Total from Permanent Grass, ACREAGE, and YIELD per Acre in the Year 1917, compared with the YIELD for the Years 1916 and 1915, and the AVERAGE of the Ten Years, 1907-1916, in each COUNTY of SCOTLAND.

COUNTIES.	FROM CLOVER, SAINFOIN, AND GRASSES.						FROM PERMANENT GRASS.					
	Total Produce in 1917.	Acreage in 1917.	Yield per Acre.			Average of the Ten Years, 1907-1916.	Total Produce in 1917.	Acreage in 1917.	Yield per Acre.			Average of the Ten Years, 1907-1916.
			1917.	1916.	1915.				1917.	1916.	1915.	
	Tons.	Acres.	Cwts.	Cwts.	Cwts.	Cwts.	Tons.	Acres.	Cwts.	Cwts.	Cwts.	Cwts.
Aberdeen	75,391	49,825	30.26	34.73	27.05	28.61	1,060	937	22.64	25.90	23.99	21.73
Argyll	19,617	12,580	31.19	33.29	26.44	29.30	20,520	15,140	27.11	40.54	28.41	33.07
Ayr	46,191	28,743	32.14	35.31	29.44	32.24	47,701	22,120	43.13	44.50	40.26	42.99
Banff	13,845	10,624	26.06	38.48	27.26	29.09	316	303	20.87	21.88	17.59	15.61
Berwick	17,746	11,825	30.01	39.79	27.40	33.88	3,818	3,291	23.19	27.75	20.66	25.91
Bute	4,525	2,393	37.83	38.89	33.03	36.03	754	429	35.16	26.23	31.07	34.15
Caithness	8,437	9,757	17.29	26.46	17.63	19.57	513	1,287	7.98	12.35	8.82	11.29
Clackmannan	3,217	1,556	41.35	42.46	41.34	41.70	2,573	1,076	47.82	46.67	45.71	39.67
Dumbarton	10,413	6,268	33.22	39.70	31.20	35.09	3,544	2,041	34.72	37.28	35.64	34.62
Dumfries	27,685	20,299	27.28	30.84	25.69	24.16	25,137	19,022	26.43	29.06	25.96	27.35
Elgin or Moray	8,462	5,848	28.94	36.90	29.50	31.91	323	264	24.48	33.07	23.78	25.34
Fife	50,898	27,399	37.15	42.82	33.22	36.01	6,796	3,849	35.32	35.57	34.74	31.01
Forfar	38,882	22,135	35.13	47.07	28.16	35.24	2,519	1,774	28.40	33.52	25.28	24.84
Haddington	23,041	11,372	40.52	49.77	33.50	50.85	1,299	797	32.57	39.49	30.17	32.25
Inverness	14,512	12,206	23.78	30.56	18.27	22.73	5,274	6,956	15.17	25.81	20.65	19.52
Kincardine	18,507	13,258	27.92	29.87	21.86	26.69	635	652	19.50	17.76	16.48	15.92
Kinross	5,373	2,946	36.48	35.11	32.54	33.77	1,700	989	34.37	35.91	34.66	33.27
Kirkcudbright	14,472	10,095	28.67	29.42	23.28	26.39	18,133	13,153	27.57	28.72	23.42	26.23
Lanark	56,230	34,155	32.93	33.70	27.29	33.06	19,371	13,345	29.03	32.19	24.60	31.26
Linlithgow	14,558	7,497	38.84	48.21	34.26	49.24	3,335	1,916	34.81	43.65	34.48	35.18
Mid-Lothian	25,862	12,837	40.29	49.97	35.69	52.25	3,765	2,302	32.70	40.38	31.26	33.69
Nairn	2,438	2,051	23.77	31.23	16.21	19.66	249	275	18.09	23.70	14.00	15.59
Orkney	8,341	9,670	17.25	22.02	16.57	19.22	168	451	7.47	9.91	8.25	9.90
Peebles	3,877	2,814	27.56	35.61	23.39	33.40	2,032	1,437	28.29	33.23	28.45	30.99
Perth	53,324	34,635	30.79	35.99	28.39	29.68	16,374	11,767	27.83	32.28	24.10	24.34
Renfrew	21,743	10,280	42.30	39.38	42.21	37.98	14,660	6,607	44.38	42.93	38.20	37.60
Ross and Cromarty	15,439	13,377	23.08	28.46	20.25	21.90	1,933	2,314	16.71	18.87	15.46	14.89
Roxburgh	15,246	9,664	31.55	35.80	26.41	31.61	10,431	7,231	28.85	33.12	25.14	27.80
Selkirk	2,217	1,319	33.62	36.22	22.83	32.66	2,902	2,151	21.57	31.69	28.33	26.68
Shetland	1,944	1,570	24.76	20.50	22.60	23.59	1,085	1,676	12.94	34.68	20.09	20.32
Stirling	22,999	12,587	36.54	35.84	39.28	36.02	15,217	7,714	39.45	36.22	39.34	34.73
Sutherland	4,105	4,381	18.74	21.58	15.74	18.19	1,167	1,364	17.10	19.09	14.09	16.01
Wigtown	7,831	5,536	28.29	35.43	27.72	33.23	8,410	5,114	32.89	36.61	24.10	27.12
Total	657,368	421,502	31.19	36.18	27.84	31.75	243,714	159,744	30.51	34.54	28.74	30.01

TABLE No. 6.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN EACH COUNTY OF SCOTLAND AS RETURNED ON JUNE 4, 1918.

COUNTIES.	HORSES (including Ponies).						CATTLE.						SHEEP.			PIGS.
	Used solely for Agriculture, &c.*	Stallions.†	Unbroken Horses.		Other Horses.	Total.	Cows in Milk.	Cows in Calf, but not in Milk.	Heifers in Calf.	Other Cattle.		Total.	1 Year Old and above.	Under 1 Year.	Total.	
			1 Year & above.	Under 1 Year.						2 Years & above.	Under 2 Years.					
1. Aberdeen	20,569	84	6,394	2,684	2,671	32,402	37,199	3,858	4,545	38,902	88,104	172,608	115,392	98,193	213,585	10,111
2. Argyll	4,182	44	1,208	494	545	6,473	17,302	3,001	1,947	11,316	26,423	59,989	523,383	280,290	803,673	4,801
3. Ayr	7,325	65	1,897	710	1,394	11,391	44,580	7,174	8,462	12,198	41,882	114,296	212,054	146,606	358,660	11,435
4. Banff	5,800	10	1,748	722	712	8,992	10,315	1,102	1,221	7,105	23,753	43,496	38,485	26,474	64,959	2,260
5. Berwick	3,852	16	655	203	528	5,254	2,398	379	539	6,166	9,681	19,163	152,881	159,692	312,573	3,613
6. Bute	900	3	226	86	110	1,325	2,681	420	473	1,448	4,665	9,687	27,143	15,244	42,387	597
7. Caithness	3,951	19	1,169	550	328	6,017	5,914	815	438	1,860	11,742	20,769	82,629	60,744	143,373	1,742
8. Clackmannan	489	7	170	61	94	821	927	134	147	752	1,450	3,410	8,360	6,101	14,461	541
9. Dumbarton	1,347	11	323	108	235	2,024	5,597	1,220	776	2,324	4,559	14,476	43,979	28,061	72,040	1,038
10. Dumfries	5,101	38	1,717	517	1,207	8,580	17,963	2,254	5,711	10,951	31,923	68,802	310,607	228,358	538,965	7,988
11. Edinburgh	3,079	17	479	154	747	4,476	8,437	932	583	2,687	5,134	17,773	95,813	75,228	171,041	9,940
12. Elgin or Moray	3,379	16	989	444	358	5,186	5,402	639	528	4,176	11,583	22,328	29,854	20,221	50,075	1,436
13. Fife	6,870	34	1,630	585	1,517	10,636	9,732	1,738	1,859	12,983	20,232	46,544	54,955	52,048	107,003	6,712
14. Forfar	7,522	20	1,334	295	998	10,169	9,789	999	1,006	15,395	20,182	47,371	92,027	73,169	165,196	6,927
15. Haddington	2,970	6	349	126	326	3,777	1,567	252	343	2,826	3,652	8,640	69,098	57,497	126,595	1,903
16. Inverness	5,968	45	1,320	627	512	8,472	15,532	3,206	1,203	5,277	21,446	46,664	343,087	186,703	529,790	1,265
17. Kincardine	3,669	7	892	293	452	5,313	5,218	630	656	5,663	12,867	25,034	23,513	19,346	42,859	2,048
18. Kinross	755	3	269	88	116	1,231	1,081	176	208	1,367	3,665	6,497	17,132	14,907	32,039	691
19. Kirkcudbright	3,483	68	1,061	286	837	5,735	16,022	1,138	4,365	10,738	23,435	55,698	210,892	147,695	358,587	10,375
20. Lanark	6,346	92	1,580	570	1,225	9,813	28,497	7,135	4,739	9,744	25,374	75,489	140,852	97,310	238,162	7,181
21. Linlithgow	1,547	9	438	181	307	2,482	3,846	854	685	2,149	4,081	11,615	9,217	6,550	15,767	1,182
22. Nairn	868	3	310	101	121	1,403	1,773	176	159	505	3,507	6,120	10,744	5,799	16,543	469
23. Orkney	4,836	34	1,101	604	708	7,283	8,409	1,355	872	4,435	17,407	32,478	18,927	17,246	36,173	1,405
24. Peebles	755	12	178	50	156	1,151	1,490	266	514	1,142	3,789	7,201	113,611	88,708	202,319	402
25. Perth	9,548	54	2,260	697	1,380	13,939	13,575	1,930	2,338	14,456	38,662	70,961	385,011	230,266	615,277	7,209
26. Renfrew	2,275	36	583	207	440	3,541	11,312	3,172	2,052	2,777	8,291	27,604	24,304	17,563	41,867	1,723
27. Ross and Cromarty	5,305	27	1,357	392	493	7,574	13,781	2,102	1,526	6,183	17,198	40,790	183,576	99,903	283,479	3,086
28. Roxburgh	3,278	16	554	186	705	4,739	3,716	487	679	5,328	9,252	19,462	275,651	242,248	517,899	3,081
29. Selkirk	503	..	80	18	93	694	963	147	111	416	1,685	3,322	99,954	74,813	174,767	323
30. Shetland	2,119	104	475	189	2,519	5,406	4,658	1,116	408	1,786	5,625	13,593	94,374	45,128	139,502	284
31. Stirling	3,319	46	933	388	552	5,238	8,123	1,929	1,703	6,860	14,170	32,785	71,557	51,093	122,650	2,082
32. Sutherland	1,750	5	349	104	180	2,388	3,743	805	346	1,165	4,680	10,739	134,023	73,475	207,498	457
33. Wigtown	3,709	50	1,222	433	685	6,099	24,279	1,261	2,524	7,753	18,621	54,438	68,872	49,562	118,434	13,700
Total	137,369	1,001	35,250	13,153	23,251	210,024	345,821	52,802	53,666	218,833	538,720	1,209,842	4,081,957	2,796,241	6,878,198	128,007

* Including Mares kept for breeding.

† Above two years old used, or intended to be used, for service.

Table No. 7.—Quantity and Value of Corn, &c., imported into the United Kingdom in the undermentioned Years.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1916.	1917.	1918.	1916.	1917.	1918.
Wheat from—	Cwt.	Cwt.	Cwt.	£	£	£
Russia	12,500	111,406	..	7,744	99,513	..
United States	64,544,100	54,208,300	24,757,610	45,996,492	49,811,774	22,674,483
Chile	116,900	500	..	93,110	392	..
Argentine Republic	4,495,700	6,700,600	14,475,500	3,421,712	6,168,554	13,326,998
British East Indies	5,611,900	2,744,700	620,300	4,458,620	2,540,034	591,170
Australia	3,699,620	9,243,700	2,010,800	2,759,641	8,920,735	1,892,530
New Zealand	30,500	3,500	..	26,501	3,134	..
Canada	21,551,000	18,408,300	15,968,700	15,245,348	16,949,740	14,499,776
Other countries	8,100	14,000	196,800	3,776	12,722	182,829
Total	106,070,320	91,435,006	58,029,710	72,012,944	84,506,598	53,167,786
Wheat, meal, and flour, from—						
France	5	..	..	5	..	..
United States	5,182,049	8,041,782	17,963,100	4,396,727	10,147,423	24,029,322
Argentine Republic	17,200	16,000	1,200	11,648	19,692	1,460
Australia	501,360	1,851,900	1,679,100	457,604	2,453,767	2,210,294
Canada	4,227,611	3,955,500	5,564,700	3,670,015	5,249,777	7,671,851
Other countries	32,100	474,600	1,151,500	32,410	598,843	1,613,756
Total	9,960,325	14,339,782	26,359,600	8,568,409	18,469,502	35,526,683
Barley	15,819,500	9,138,500	5,025,200	10,411,218	8,967,855	5,426,012
Oats	12,503,500	12,621,700	10,934,700	6,545,442	11,557,746	11,478,674
Peas	991,721	1,284,990	2,180,495	1,290,605	2,473,034	5,405,696
Beans, other than Haricot	1,110,605	905,087	438,511	687,119	883,513	641,802
Indian corn or maize	34,159,210	25,008,918	14,751,177	19,898,028	20,385,915	13,930,365
Indian corn meal	418,643	1,666,567	1,428,465	246,713	1,968,611	1,616,990
Oatmeal	973,333	2,291,387	2,908,429	986,855	3,864,529	4,842,330
Offals of corn and grain, including rice-meal	3,774,653	1,446,019	93,923	1,637,343	902,175	74,864
Rice, exclusive of rice-meal—						
From Brit. East Indies	6,717,064	4,759,860	6,938,048	5,268,141	5,424,377	8,452,529
From other countries	1,941,988	1,733,197	750,550	1,652,927	2,150,740	1,108,637
Other kinds of grain and corn	2,260,060	5,274,007	4,563,956	2,065,118	8,922,844	7,572,389
Other kinds of meal and flour	54,234	136,425	1,013,089	52,583	253,567	1,329,976
Total of corn, &c.	..	..	..	131,323,445	170,731,006	150,574,733

Table No. 8.—Return of the Average Prices of Wool in the Year 1917.

Years.	Australian.	South African.	English Fleeces.
	Per lb.	Per lb.	Per lb.
	s. d.	*s. d.*	*s. d.* *s. d.*
1917	1 $4\frac{7}{8}$	1 $3\frac{7}{8}$	1 $6\frac{7}{8}$ to 2 $0\frac{3}{8}$

TABLE No. 9.—QUANTITIES AND VALUES OF CORN, MEAT, FOOD PRODUCTS, AND ARTICLES AFFECTING AGRICULTURE, imported into the United Kingdom in the Year 1918, with the Corresponding Figures for 1916 and 1917.

[From Trade and Navigation Returns.]

	Quantities.			Values.		
	1916.	1917.	1918.	1916.	1917.	1918.
ANIMALS, LIVING:—	No.	No.	No.	£	£	£
Cattle	..	..	..	..	..	..
Sheep and lambs	..	..	..	..	..	..
Swine	..	..	..	..	..	..
Total value	..	..	..	..	..	..
GRAIN, FLOUR, &c.:—	Cwt.	Cwt.	Cwt.	£	£	£
Wheat	100,070,320	91,435,006	58,029,710	72,012,944	84,506,598	53,167,786
Wheat meal and flour	9,960,325	14,339,782	26,359,600	8,568,409	18,469,502	35,526,683
Barley	15,819,500	9,138,500	5,025,200	10,411,218	8,967,855	5,426,012
Oats	12,503,500	12,621,700	10,934,700	6,545,442	11,557,746	11,478,674
Peas	991,721	1,284,990	2,180,495	1,290,605	2,473,034	5,405,696
Beans	1,110,605	905,087	438,511	687,119	883,513	641,802
Maize or Indian corn	34,159,210	25,008,918	14,751,177	19,898,028	20,385,915	13,930,365
Maize-meal	418,643	1,666,567	1,428,465	246,713	1,968,611	1,616,990
Oatmeal	973,333	2,291,387	2,908,429	986,855	3,864,529	4,842,330
Offals of corn and grain, including rice-meal	3,774,653	1,446,019	93,923	1,637,343	902,175	74,864
Rice, exclusive of rice-meal—						
From British East Indies	6,717,064	4,759,860	6,938,048	5,268,141	5,424,377	8,452,529
From other countries	1,941,988	1,733,197	750,550	1,652,927	2,150,740	1,108,637
Other kinds of grain & corn	2,260,060	5,274,007	4,563,956	2,065,118	8,922,844	7,572,389
Other kinds of meal and flour	54,234	136,425	1,013,089	52,583	253,567	1,329,976
Total value	..	..	..	131,323,445	170,731,006	150,574,733
MEAT:—	Cwt.	Cwt.	Cwt.	£	£	£
Beef, salted	65,294	44,237	14,682	213,640	219,790	97,811
*Beef	7,052,018	6,125,603	7,697,186	23,032,972	24,029,330	36,422,940
*Mutton	3,637,147	2,569,059	2,089,533	13,507,890	10,407,942	9,287,182
Bacon	7,435,955	6,567,574	10,477,948	34,381,717	41,409,151	90,409,730
Hams	1,554,836	1,180,166	1,554,407	6,841,430	7,360,608	13,025,097
Pork, salted (not bacon or hams)	41,762	22,750	11,691	134,023	117,816	77,511
*Pork	293,281	161,427	99,630	1,169,094	781,530	685,851
*Meat, unenumerated	704,763	664,822	690,620	1,929,234	2,554,576	3,342,004
" " salted	27,519	15,502	2,528	109,538	98,064	14,142
Meat, preserved, otherwise than by salting	1,884,777	1,900,598	2,188,600	10,877,401	13,934,760	19,217,438
*Rabbits (dead)	650,495	321,814	522,542	1,185,537	703,876	1,216,033
Total of dead meat	23,347,847	19,573,552	25,349,367	93,382,476	101,617,443	173,795,739
DAIRY PRODUCE:—	Cwt.	Cwt.	Cwt.	£	£	£
Butter	2,175,415	1,806,516	1,614,625	18,964,002	18,895,707	20,225,917
Margarine	2,752,866	1,807,806	302,591	8,983,007	7,778,285	1,567,767
Cheese	2,604,124	2,946,066	2,357,822	12,945,765	19,462,390	15,910,041
Total	7,532,405	6,560,388	4,275,038	40,892,774	46,136,382	47,703,725

* Fresh, Chilled, and Frozen.

TABLE No. 9—*Continued.*

	Quantities.			Values.		
	1916.	1917.	1918.	1916.	1917.	1918.
				£	£	£
POULTRY (alive or dead)	137,624	128,343	34,915	636,115	768,177	287,161
GAME (alive or dead)	..	..	..	32,408	12,461	5,892
	Gt. Hunds.	Gt. Hunds.	Gt. Hunds.			
EGGS	6,606,377	4,922,402	2,656,415	4,742,333	5,067,202	4,621,629
Total value	..	..	..	5,410,856	5,847,840	4,914,182
				£	£	£
FRUIT, VEGETABLES, &c.:—	Cwt.	Cwt.	Cwt.			
Apples	2,658,230	889,755	410,169	2,741,102	1,122,386	903,982
Cherries	14,140	1,754	50	27,852	5,199	218
Plums	61,735	47,307	..	113,176	116,389	..
Pears	160,591	59,562	2,426	242,062	114,220	7,732
Grapes	798,204	205,426	415,399	1,099,090	580,116	1,880,794
Oranges	5,875,188	2,818,374	2,640,811	3,085,175	2,608,548	5,993,506
Lemons	691,198	495,090	792,143	498,458	593,047	1,950,272
Unenumerated	265,480	15,696	6,807	275,283	50,541	46,009
	Bushels.	Bushels.	Bushels.			
Onions	6,843,245	4,748,009	4,343,270	2,062,149	2,664,371	3,783,788
	Cwt.	Cwt.	Cwt.			
Potatoes	1,788,247	1,598,952	1,015,793	1,518,831	1,500,335	1,087,325
Vegetables, unenumerated (raw)	..	..	..	233,340	177,470	96,779
Hops	148,407	9,078	52	714,518	38,440	210
Total value	..	..	..	12,611,036	9,571,062	15,700,615
				£	£	£
OTHER ARTICLES:—	Cwt.	Cwt.	Cwt.			
Lard	1,932,827	1,500,194	2,760,404	6,982,985	8,942,355	21,163,529
	Lb.	Lb.	Lb.			
Wool, sheep and lambs	618,946,684	623,232,601	413,419,907	37,560,014	49,504,517	36,423,732
Wood and timber—	Loads.	Loads.	Loads.			
Hewn (pit-props or pit-wood)	2,021,282	996,148	703,014	6,878,106	4,240,345	2,948,006
Sawn or split, planed or dressed	3,683,008	1,698,258	1,577,387	27,741,580	17,879,937	21,478,207
Staves	82,010	33,332	36,384	804,907	492,825	680,049
	Tons.	Tons.	Tons.			
Oilseed-cake (not sweetened)	283,997	212,892	10,828	3,115,947	3,638,144	210,409
Seeds—	Cwt.	Cwt.	Cwt.			
Clover and grass	233,249	204,354	232,795	692,377	727,908	1,375,831
	Tons.	Tons.	Tons.			
Cotton	329,237	219,045	338,194	4,448,933	4,002,107	6,483,085
	Qrs.	Qrs.	Qrs.			
Flax or linseed	2,506,836	1,003,431	1,310,278	9,356,631	5,438,130	8,164,199
Rape	375,087	305,505	292,442	1,271,489	1,480,745	1,662,008
	Tons.	Tons.	Tons.			
Soya beans	65,364	25,625	..	960,356	499,813	..
Bones (whether burnt or not)	27,405	3,870	5,144	243,376	41,628	121,982
Guano	21,645	2,601	..	218,714	27,675	..
Basic slag	..	..	..	..	..	..
Nitrate of soda (cubic nitre)	20,896	1,190	300	361,619	19,500	6,000
Phosphate of lime and rock phosphate	333,421	276,617	464,747	838,822	1,172,557	1,947,987
	Centals.	Centals.	Centals.			
Cotton, raw of 100 lb.	21,710,022	16,231,713	14,892,231	84,729,677	10,590,634	150,286,308
	Tons.	Tons.	Tons.			
Hemp	143,891	120,612	119,330	6,802,391	8,893,015	14,071,685
Flax	86,479	84,337	25,035	7,577,109	12,514,735	3,907,093
Hides untanned—	Cwt.	Cwt.	Cwt.			
Dry	600,358	711,919	561,752	3,351,973	5,173,302	4,291,840
Wet	770,329	911,333	1,065,402	4,132,000	6,583,944	7,636,910
	Gallons.	Gallons.	Gallons.			
Petroleum	451,556,152	826,895,171	1,326,776,603	19,779,080	33,886,972	64,070,148

TABLE No. 10.—QUANTITY AND VALUE OF DEAD MEAT imported into the United Kingdom in the undermentioned Years.

	Quantities.			Values.		
	1916.	1917.	1918.	1916.	1917.	1918.
BACON, from—	Cwt.	Cwt.	Cwt.	£	£	£
Denmark	1,641,613	1,123,155	21,491	9,087,913	7,767,592	189,853
United States	4,004,410	3,467,085	8,645,318	16,848,826	21,061,674	74,536,767
Canada	1,594,114	1,767,085	1,719,318	7,443,584	11,292,514	14,954,561
Other countries	195,818	210,249	91,821	1,001,394	1,287,371	728,249
Total	7,435,955	6,567,574	10,477,948	34,381,717	41,409,151	90,409,730
BEEF (salted), from—						
United States	64,630	41,021	13,285	211,577	205,157	88,054
Other countries	664	3,216	1,397	2,063	14,633	9,757
Total	65,294	44,237	14,682	213,640	219,790	97,811
*BEEF (fresh and refrigerated)—						
United States	930,207	938,126	3,583,582	3,520,205	4,240,703	18,213,934
Uruguay	201,916	230,803	210,132	589,852	988,816	955,279
Argentine Republic	4,037,678	2,671,132	2,003,705	12,785,448	10,501,955	9,228,565
Australia	765,493	1,107,704	551,609	2,425,496	3,784,994	1,976,733
New Zealand	875,086	760,094	460,289	2,824,664	2,709,385	1,635,046
Other countries	241,638	417,744	887,869	887,327	1,803,477	4,413,383
Total	7,052,018	6,125,603	7,697,186	23,032,972	24,029,330	36,422,940
HAMS, from—						
United States	1,493,606	1,126,736	1,419,008	6,572,170	7,010,985	11,902,911
Canada	60,205	50,070	110,147	264,151	327,479	923,090
Other countries	1,025	3,360	25,252	5,109	22,144	199,096
Total	1,554,836	1,180,166	1,554,407	6,841,430	7,360,608	13,025,097
*MEAT (unenumerated, fresh and refrigerated), from—						
Netherlands	11,073	4,328	..	29,824	16,866	..
United States	151,571	115,839	89,856	513,697	551,535	406,325
Argentine Republic	391,529	353,770	347,272	1,607,614	1,324,542	1,715,109
Other countries	178,109	206,387	256,020	487,637	759,697	1,234,712
Total	732,282	680,324	693,148	2,638,772	2,652,640	3,356,146
MEAT, preserved otherwise than by salting—						
Beef	1,616,784	1,554,154	1,867,602	9,422,144	11,100,127	16,068,816
Mutton	43,226	51,255	39,706	184,027	328,263	291,988
Other sorts	224,767	295,189	231,292	1,271,230	2,506,370	2,856,634
Total	1,884,777	1,900,598	2,188,600	10,877,401	13,934,760	19,217,438
*MUTTON (fresh and refrigerated)—						
Netherlands	16,504	26,613	..	68,082	152,509	..
Uruguay	20,834	29,473	57,356	76,381	131,401	298,235
Argentine Republic	768,259	470,836	710,630	2,885,754	2,166,854	3,605,600
Australia	261,352	496,114	26,168	914,562	1,821,520	85,774
New Zealand	2,287,961	1,235,275	1,234,005	8,416,301	4,793,705	5,041,073
Other countries	282,237	310,748	61,374	1,146,810	1,341,953	256,500
Total	3,637,147	2,569,059	2,089,533	13,507,890	10,407,942	9,287,182
PORK (salted, not Bacon or Hams), from—						
Denmark	..	..	..	..	..	..
United States	40,956	20,300	2,899	131,021	102,527	19,413
Other countries	806	2,450	8,792	3,002	15,289	58,098
Total	41,762	22,750	11,691	134,023	117,816	77,511
*PORK (fresh and refrigerated)—						
Netherlands	759	..	..	1,908	..	..
United States	249,973	124,638	67,052	998,221	604,584	472,969
Other countries	42,549	36,789	32,578	168,965	176,946	212,882
Total	293,281	161,427	99,630	1,169,094	781,530	685,851
*RABBITS (dead), from—						
Australia	601,720	276,222	496,262	1,085,938	609,562	1,158,692
New Zealand	44,669	45,562	26,232	87,982	94,234	57,221
Other countries	4,106	30	48	11,617	80	120
Total	650,495	321,814	522,542	1,185,537	703,876	1,216,033
Total of dead meat	23,347,847	19,573,552	25,349,367	98,382,476	101,617,443	173,795,739

* In the Official Returns from 1909 the imports are shown separately as "Fresh," "Chilled," and "Frozen."

TABLE No. 11.—QUANTITIES AND VALUES OF BUTTER, MARGARINE, CHEESE, AND EGGS imported into the United Kingdom in each Year from 1916 to 1918 inclusive.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1916.	1917.	1918.	1916.	1917.	1918.
BUTTER from—	Cwt.	Cwt.	Cwt.	£	£	£
Russia	31,918	...	...	199,338	...	...
Sweden	992	...	...	7,585	...	...
Denmark	1,134,801	622,160	40,327	10,378,050	7,032,600	771,291
Netherlands	36,202	75,880	9,885	336,478	762,958	164,317
France	130,249	45,707	4,770	974,743	500,145	73,989
United States	131,618	10,534	196,593	1,179,670	106,084	2,436,265
Argentine Republic	117,597	142,300	313,143	940,409	1,407,846	3,797,050
Victoria	81,032	219,401	217,284	693,218	2,175,881	2,725,445
New S. Wales	32,575	169,024	210,409	280,454	1,648,498	2,618,480
Queensland	26,913	128,364	122,769	222,328	1,261,612	1,519,689
New Zealand	331,162	310,925	372,572	2,727,645	3,195,608	4,599,166
Canada	101,531	33,057	61,971	855,536	343,086	777,150
Other countries	18,825	49,164	64,902	168,548	461,389	743,075
Total	2,175,415	1,806,516	1,614,625	18,964,002	18,895,707	20,225,917
MARGARINE from—	Cwt.	Cwt.	Cwt.	£	£	£
Netherlands	2,738,343	1,801,928	302,541	8,917,714	7,753,074	1,567,441
France	9,800	479	...	50,551	2,540	...
Other countries	4,723	5,399	50	14,742	22,671	326
Total	2,752,866	1,807,806	302,591	8,983,007	7,778,285	1,567,767
CHEESE from—	Cwt.	Cwt.	Cwt.	£	£	£
Netherlands	112,587	244,865	87,896	640,217	1,549,994	623,696
Italy	31,938	371	...	152,492	4,632	...
United States	274,687	267,138	472,729	1,305,932	1,895,744	3,308,257
Australia	1	63,349	47,282	4	482,327	285,663
New Zealand	667,214	609,700	610,949	3,352,195	4,000,665	3,851,540
Canada	1,505,018	1,757,949	1,125,668	7,432,179	11,509,020	7,695,411
Other countries	12,679	2,694	13,298	62,746	20,008	145,474
Total	2,604,124	2,946,066	2,357,822	12,945,765	19,462,390	15,910,041
EGGS from—	Great Hundreds.	Great Hundreds.	Great Hundreds.	£	£	£
Russia	734,441	58,845	...	424,878	29,422	...
Denmark	1,392,111	1,654,900	1,170,535	1,303,177	2,250,219	2,592,033
Netherlands	84,737	202,177	...	83,067	215,892	...
France	...	...	...	...	...	...
Italy	...	...	...	...	...	...
United States	779,716	349,339	337,345	591,203	403,693	617,216
Egypt	1,889,947	1,602,671	729,807	974,658	1,015,340	715,170
Canada	1,431,778	672,761	388,985	1,173,788	823,383	666,864
Other countries	293,647	381,709	29,743	191,562	329,253	30,346
Total	6,606,377	4,922,402	2,656,415	4,742,333	5,067,202	4,621,629

TABLE No. 12.—NUMBER OF LIVE STOCK IN 1915, 1916, AND 1917, returned as entering the Markets at the Places scheduled under the Markets and Fairs (Weighing of Cattle) Act, 1891.

[*From Agricultural Statistics*, 1917.]

	CATTLE.			SHEEP.			PIGS.		
	1915.	1916.	1917.	1915.	1916.	1917.	1915.	1916.	1917.
Aberdeen.	45,281	78,060	83,316	221,819	239,708	218,682	17,128	15,181	12,533
Dundee .	16,922	16,959	14,227	23,312	24,108	20,473	4,865	4,648	3,860
Edinburgh	66,168	62,033	59,394	215,517	206,075	198,439	9,205	8,354	7,642
Stirling .	69,583	62,765	61,601	244,783	223,666	224,515	4,998	6,156	6,052
Glasgow .	71,259	75,006	77,527	378,122	362,146	332,446	6,972	7,704	6,423
Perth . .	101,783	91,032	83,202	424,675	384,610	321,299	14,731	12,519	9,505
	370,996	385,855	379,267	1,508,228	1,440,313	1,315,854	57,899	54,562	46,015

TABLE No. 13.—AVERAGE PRICES OF FAT CATTLE PER CWT. (LIVE WEIGHT) at the undermentioned Places in each Year from 1910 to 1917, together with the average Prices for Scotland, England, and Great Britain, compiled from the Returns received under the Markets and Fairs (Weighing of Cattle) Act, 1891.

	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Aberdeen . . .	35 10	34 7	38 9	38 4	39 0			72 7
Dundee . . .	35 8	34 0	38 1	37 0	37 9		56 8	
Edinburgh . .	38 7	36 10	41 2	39 10	40 7	52 4	60 4	77 8
Glasgow . . .	36 2	35 1	39 7	38 9	39 10	52 1	59 8	
Perth . .	40 3	37 10	42 2	40 7	41 3	54 4	62 1	79 9
SCOTLAND . . .	37 2	35 8	40 0	38 11	39 8			
ENGLAND . . .	36 0	35 0	37 9	38 11	39 8			
GREAT BRITAIN .	36 11	35 6	39 6	38 11	39 8			

TABLE No. 14.—NUMBER AND VALUE OF LIVE CATTLE, SHEEP, AND SWINE imported into the United Kingdom in the undermentioned Years. [*From Trade and Navigation Returns.*]

Figures not available.

	Number.			Value.		
	1915.	1916.	1917.	1915.	1916.	1917.
CATTLE, from—				£	£	£
Channel Islands	..	..	..	..	..	..
Canada	..	..	..	..	..	..
United States	..	..	..	..	..	..
Argentine Republic	..	..	..	..	..	..
Other countries	..	..	..	..	..	..
Total	..	..	..	..	..	..
SHEEP AND LAMBS, from—						
Canada	..	..	..	..	..	..
United States	..	..	..	..	..	..
Argentine Republic	..	..	..	..	..	..
Other countries	..	..	..	..	..	..
Total	..	..	..	..	..	..
SWINE (not separately enumerated)	..	..	..	..	..	..
TOTAL VALUE OF ANIMALS LIVING	..	..	..	..	..	..

TABLE No. 15.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS imported into Great Britain from Ireland in each of the Years 1912-1918.

	1912.	1913.	1914.	1915.	1916.	1917.	1918.
*HORSES :—							
Stallions	287	265	188	276	272	357	303
Mares	17,010	17,914	15,227	7,729	2,779	2,062	8,402
Geldings	17,414	18,312	15,338	9,806	3,827	3,183	11,376
Total	34,711	36,491	30,753	17,811	6,878	5,602	20,081
CATTLE: Oxen, Bulls, and Cows :—							
Fat	336,559	354,734	455,444	363,272	423,733	404,787	375,705
Store	193,922	692,228	448,703	440,995	442,745	394,865	289,694
Other cattle	8,851	8,152	6,096	9,459	9,398	62,952	33,961
Calves	15,767	53,045	34,335	27,009	13,180	25,992	20,752
Total	555,099	1,108,159	944,578	840,735	889,056	888,596	720,112
SHEEP :—							
Sheep	328,028	319,284	256,607	229,896	313,467	415,338	310,837
Lambs	290,631	336,416	280,932	259,495	323,270	347,773	304,036
Total	618,659	655,700	537,539	489,391	636,737	763,111	614,873
PIGS :—							
Fat	253,165	187,422	146,458	171,963	263,989	185,958	165,712
Store	12,076	12,874	1,464	7,093	14,158	13,373	4,597
Total	265,241	200,296	147,922	179,056	278,147	199,331	170,309

* Not including Army Horses.

EDINBURGH CORN-MARKET GRAIN TABLES for WHEAT, BARLEY, OATS, and BEANS, showing the Quantity offered for Sale, the Quantity Sold, the Highest, Lowest, and Average Prices; also the Bushel-weights as fixed by Government, likewise the Results for every Month, and the final Result for the year 1918.

WHEAT.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Bushel Weights.
1918	Imp. qr.	Imp. qr.	*s. d.*	*s. d.*	*s. d.*	
Jan.						
2	..	..	..	..	..	
9	100	100	75 6	75 0	75 3	
16	99	99	74 6	74 6	74 6	
23	75	75	74 6	74 6	74 6	
30	50	50	72 0	72 0	72 0	
	324	324	74 3	74 2	74 4	
Feb.						
6	..	..	..	..	..	
13	75	75	75 6	..	75 6	
20	94	94	75 6	..	75 6	
27	30	..	..	..	..	
	199	169	75 6	..	75 6	
March						
6	..	..	..	..	..	
13	85	85	75 6	..	75 6	
20	100	100	75 6	74 6	75 0	
27	20	20	75 6	..	75 6	
	205	205	75 6	74 6	75 3	
April						
3	60	40	76 6	..	76 6	
10	120	120	76 6	..	76 6	
17	220	220	76 9	..	76 9	
24	100	100	78 0	76 9	77 6	
	500	480	76 10	76 9	76 10	
May						
1	..	..	..	..	..	
8	50	50	76 9	75 9	76 4	
15	..	..	..	..	..	
22	80	80	76 9	74 0	75 9	
29	120	120	77 9	76 9	77 3	
	250	250	77 2	75 10	76 7	
June						
5	50	50	77 9	..	77 9	
12	..	..	..	..	..	
19	..	..	..	..	..	
26	150	150	77 9	..	77 9	
	200	200	77 9	..	77 9	
July	*Nil.*					63 lb. as fixed by Government.
Aug.	*Nil.*					
Sept.	*Nil.*					

WHEAT—*continued.*

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Bushel Weights.
1918 Oct.	Imp. qr.	Imp. qr.	*s. d.*	*s. d.*	*s. d.*	63 lb. as fixed by Government.
2	..	..	..	..	..	
9	65	..	..	..	..	
16	..	..	..	..	..	
23	..	..	..	..	..	
30	..	..	..	..	..	
	65	..	..	..	..	
Nov.						
6	..	..	..	..	..	
13	..	..	..	..	..	
20	50	7	82 0	..	82 0	
27	55	21	82 0	..	82 0	
	105	28	82 0	..	82 0	
Dec.						
4	..	..	..	..	..	
11	..	..	..	..	..	
18	..	..	..	..	..	
24	..	..	..	..	..	
31	19	..	..	..	..	
	19	..	..	..	..	
Result for year	1867	1656	76 3	74 9	76 2	

BARLEY.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Bushel Weights.
1918 Jan.	Imp. qr.	Imp. qr.	*s. d.*	*s. d.*	*s. d.*	56 lb. as fixed by Government.
2	..	..	..	..	..	
9	60	60	65 6	65 0	65 3	
16	50	50	65 6	..	65 6	
23	30	30	65 6	..	65 6	
30	..	..	..	..	..	
	140	140	65 6	65 0	65 5	
Feb.						
6	160	160	67 0	63 6	66 4	
13	25	25	64 6	..	64 6	
20	350	310	63 0	62 9	62 10	
27	50	50	62 9	..	62 9	
	585	545	65 0	62 10	63 11	
March						
6	..	..	..	..	..	
13	50	50	62 9	..	62 9	
20	..	..	..	..	..	
27	..	..	..	..	..	
	50	50	62 9	..	62 9	

BARLEY—*continued.*

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Bushel Weights.
1918	Imp. qr.	Imp. qr.	*s. d.*	*s. d.*	*s. d.*	56 lb. as fixed by Government.
April						
3	..	..	..	..	..	
10	74	74	63 9	62 9	63 7	
17	..	..	..	..	..	
24	20	20	62 9	..	62 9	
	94	94	63 6	62 9	63 5	
May	*Nil.*					
June	*Nil.*					
July	*Nil.*					
Aug.	*Nil.*					
Sept.	*Nil.*					
Oct.	*Nil.*					
Nov.	*Nil.*					
Dec.	*Nil.*					
Result for Year	869	829	64 8	63 0	64 0	

OATS.

Date.	Quantity offered for Sale.	Quantity Sold.	Highest Price.	Lowest Price.	Average Price.	Bushel Weights
1918	Imp. qr.	Imp. qr.	*s. d.*	*s. d.*	*s. d.*	
Jan.						
2	165	165	49 3	47 3	48 1	
9	180	180	49 3	47 3	48 6	
16	318	238	55 6	47 3	49 9	
23	285	285	55 0	47 3	50 11	
30	140	140	49 3	47 3	48 2	
	1,088	1,008	51 6	47 3	49 4	
Feb.						
6	180	180	58 0	46 3	48 11	
13	220	200	59 0	47 3	53 1	
20	220	90	58 0	54 0	56 3	
27	344	210	58 0	49 3	50 11	
	964	680	58 2	49 0	51 9	
March						
6	144	144	60 0	51 0	54 4	
13	160	70	60 0	51 0	53 7	
20	355	140	52 6	51 0	51 8	
27	25	25	49 3	48 6	48 8	
	684	379	55 10	50 9	52 10	
April						
3	70	40	49 3	..	49 3	
10	60	60	50 3	..	50 3	
17	55	50	50 3	..	50 3	
24	85	85	50 3	..	50 3	
	270	235	50 1	..	50 1	
May						
1	..	..	..	..	..	
8	70	70	50 3	49 3	49 6	
15	..	..	..	..	..	
22	40	40	50 3	..	50 3	
29	40	40	51 3	..	51 3	
	150	150	50 8	49 3	50 2	
June						
5	70	70	51 3	..	51 3	
12	..	..	..	..	..	
19	..	..	..	..	..	
26	30	30	51 3	..	51 3	
	100	100	51 3	..	51 3	
July	*Nil.*					
Aug.	*Nil.*					
Sept.	*Nil.*					
Oct.	*Nil.*					
Nov.	*Nil.*					
Dec.	*Nil.*					
Result for year	3,256	2,552	52 3	48 7	50 8	42 lb. as fixed by Government.

BEANS—*Nil.*

PRICES OF SHEEP SINCE 1818.

Table No. 1.—CHEVIOT SHEEP.

Year.	Wethers.					Ewes.					Lambs.				
	s.	d.		s.	d.	s.	d.		s.	d.	s.	d.		s.	d.
1818	28	0	to	30	0	not quoted.					8	0	to	10	0
1819	25	0	"	27	0	15	0	to	17	0	10	6	"	12	0
1820	20	0	"	25	0	16	0	"	17	0	10	0	"	11	0
1821	18	0	"	20	0	14	0	"	16	0	7	6	"	8	0
1822	12	6	"	13	0	8	0	"	8	6	4	6	"	0	0
1823	13	6	"	18	0	7	0	"	10	6	5	6	"	6	0
1824	14	0	"	19	0	7	0	"	9	0	4	6	"	6	0
1825	29	0	"	32	0	15	0	"	19	0	9	0	"	10	6
1826	17	6	"	21	6	13	0	"	15	0	7	0	"	7	6
1827	15	0	"	24	0	not quoted.					7	0	"	8	0
1828	18	0	"	27	6	12	0	to	15	0	7	0	"	8	3
1829	18	0	"	24	0	12	6	"	14	0	7	0	"	8	6
1830	15	0	"	21	0	8	0	"	11	0	6	0	"	6	9
1831	18	0	"	25	0	9	0	"	13	0	7	0	"	8	0
1832	19	0	"	24	0	11	0	"	16	0	7	0	"	9	0
1833	22	0	"	31	0	13	6	"	20	0	8	0	"	11	3
1834	22	0	"	31	0	13	6	"	21	0	9	0	"	11	6
1835	22	0	"	27	6	18	0	"	20	6	8	0	"	11	0
1836	24	0	"	31	6	16	0	"	19	0	10	0	"	14	0
1837	19	0	"	28	0	14	0	"	19	0	10	0	"	13	0
1838	23	0	"	30	6	17	0	"	22	0	12	0	"	14	0
1839	23	0	"	31	0	14	0	"	19	0	0	0	"	13	0
1840	24	0	"	33	0	15	0	"	23	0	7	0	"	11	6
1841	23	0	"	30	0	14	0	"	22	0	8	0	"	12	0
1842	22	6	"	28	0	13	0	"	17	0	7	6	"	10	0
1843	19	0	"	25	0	8	0	"	12	0	5	0	"	8	0
1844	21	0	"	29	0	10	0	"	16	0	8	0	"	10	6
1845	23	0	"	33	0	13	0	"	20	0	8	0	"	13	0
1846	24	0	"	33	6	14	6	"	21	6	10	0	"	14	6
1847	24	0	"	35	0	13	0	"	24	0	11	6	"	15	0
1848	23	0	"	34	6	13	0	"	28	0	11	6	"	15	0
1849	21	0	"	30	2	12	0	"	21	0	0	0	"	14	0
1850	20	6	"	29	6	12	0	"	20	0	8	0	"	13	0
1851	21	6	"	31	0	13	0	"	21	0	8	9	"	14	0
1852	21	0	"	32	0	15	0	"	23	0	8	0	"	14	0
1853	26	6	"	38	0	17	0	"	28	6	9	0	"	17	0
1854	25	0	"	36	0	17	0	"	26	0	9	0	"	16	6
1855	23	6	"	36	0	16	0	"	25	0	10	0	"	17	0
1856	22	0	"	35	6	15	6	"	24	0	10	0	"	15	0
1857	24	0	"	36	0	14	6	"	26	0	10	6	"	14	6
1858	24	0	"	34	6	14	0	"	24	6	10	6	"	14	0
1859	25	0	"	34	6	16	0	"	25	0	10	8	"	14	9
1860	26	0	"	38	0	17	6	"	27	6	12	6	"	17	6
1861	25	0	"	38	6	16	0	"	28	0	9	0	"	16	0
1862	27	0	"	37	6	17	6	"	28	0	10	0	"	16	0
1863	25	0	"	38	6	19	0	"	28	6	10	6	"	16	0
1864	31	0	"	41	0	21	0	"	31	6	14	0	"	18	0
1865	32	6	"	44	0	22	6	"	33	6	14	6	"	20	0
1866	37	0	"	50	0	29	0	"	42	6	15	0	"	26	0
1867	26	0	"	58	0	18	0	"	25	6	12	0	"	16	0
1868	30	0	"	32	0	15	6	"	21	0	7	6	"	13	0
1869	28	0	"	38	0	15	0	"	22	6	7	6	"	14	0
1870	35	6	"	43	0	18	0	"	28	0	10	0	"	17	0
1871	36	6	"	49	0	22	0	"	33	6	14	0	"	20	0
1872	45	0	"	56	0	32	0	"	42	0	16	0	"	22	0
1873	42	0	"	51	0	25	0	"	42	0	15	6	"	22	0
1874	33	6	"	44	6	21	0	"	36	0	12	0	"	17	0
1875	33	0	"	48	6	21	0	"	34	0	13	6	"	23	6
1876	40	0	"	52	6	23	0	"	30	0	13	6	"	25	0
1877	41	0	"	51	0	25	0	"	37	0	15	0	"	24	0
1878	35	6	"	48	0	23	6	"	35	0	14	0	"	22	0
1879	34	0	"	44	0	21	0	"	34	0	14	0	"	20	0
1880	30	0	"	43	6	20	0	"	30	0	12	6	"	20	0
1881	32	0	"	45	6	29	0	"	34	0	14	0	"	20	0
1882	40	0	"	51	0	30	0	"	40	0	14	0	"	20	6
1883	44	0	"	55	6	34	6	"	46	6	15	6	"	23	0
1884	36	0	"	47	6	29	6	"	41	6	12	6	"	20	0
1885	30	0	"	38	0	24	0	"	31	0	12	0	"	18	0
1886	32	0	"	40	0	21	0	"	29	0	12	6	"	19	0
1887	29	0	"	36	0	18	0	"	26	0	11	0	"	16	6
1888	30	0	"	38	0	19	0	"	27	0	12	0	"	17	6

TABLE No. 1.—CHEVIOT SHEEP—*Continued.*

Year.	Wethers.		Ewes.		Lambs.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1889	36 0 to	44 0	24 0 to	32 0	14 0 to	22 0
1890	31 0 "	40 0	22 0 "	30 0	12 6 "	20 0
1891	27 0 "	38 0	16 0 "	25 0	9 0 "	16 0
1892	22 0 "	30 6	13 0 "	22 0	5 0 "	11 0
1893	26 0 "	35 6	18 0 "	28 6	8 6 "	15 0
1894	26 0 "	37 0	20 0 "	31 0	10 6 "	18 6
1895	28 0 "	39 0	22 0 "	34 0	11 6 "	19 6
1896	24 6 "	34 0	19 0 "	30 6	9 0 "	16 6
1897	27 0 "	36 0	21 0 "	31 6	11 0 "	17 6
1898	27 0 "	37 0	22 0 "	32 6	12 0 "	18 6
1899	24 0 "	33 0	20 0 "	30 6	10 6 "	16 0
1900	26 0 "	36 0	22 0 "	32 6	12 0 "	17 0
1901	25 0 "	32 6	20 0 "	29 6	11 0 "	16 0
1902	24 0 "	31 6	18 0 "	27 0	9 6 "	14 6
1903	26 0 "	34 0	21 0 "	31 0	11 4 "	18 0
1904	28 6 "	36 6	23 0 "	32 6	13 0 "	20 0
1905	27 6 "	35 0	23 0 "	33 0	14 0 "	21 0
1906	30 0 "	38 0	26 0 "	34 6	15 0 "	23 0
1907	28 0 "	34 0	22 0 "	30 6	13 6 "	19 6
1908	26 0 "	32 6	21 0 "	27 6	11 6 "	17 0
1909	24 0 "	31 0	18 0 "	25 6	9 6 "	16 0
1910	27 0 "	35 0	22 0 "	31 0	12 0 "	20 0
1911	24 0 "	31 6	18 6 "	27 6	10 6 "	18 0
1912	26 0 "	34 6	22 0 "	31 0	13 0 "	21 0
1913	30 0 "	39 0	24 0 "	35 6	16 0 "	24 0
1914	32 6 "	41 0	28 0 "	39 0	18 0 "	27 6
1915	36 0 "	46 0	31 0 "	44 0	20 0 "	30 6
1916	40 6 "	51 0	34 0 "	49 0	22 0 "	34 6
1917	43 6 "	56 0	38 0 "	56 0	24 0 "	34 0
1918	50 0 "	66 0	42 0 "	61 0	25 0 "	37 0

TABLE No. 2.—BLACKFACE SHEEP.

Year.	Wethers.		Ewes.		Lambs.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1819	22 0 to	24 0	12 0 to	15 0	8 0 to	9 0
1820	20 0 "	23 3	15 6 "	17 0	7 0 "	8 6
1821	18 0 "	20 0	12 0 "	13 0	6 0 "	7 0
1822	11 6 "	13 6	5 6 "	6 0	4 6 "	0 0
1823	12 0 "	16 0	5 0 "	6 6	4 0 "	5 3
1824	9 6 "	13 6	6 0 "	7 0	4 0 "	5 0
1825	22 0 "	26 0	11 0 "	13 6	6 0 "	9 0
1826	15 0 "	17 0	8 0 "	9 0	4 6 "	6 0
1827	14 0 "	18 6	7 0 "	10 0	6 0 "	7 6
1828	15 0 "	20 0	8 0 "	11 0	5 0 "	7 6
1829	14 0 "	18 0	9 0 "	10 0	6 0 "	7 0
1830	9 6 "	13 0	4 0 "	6 0	4 6 "	6 0
1831	13 0 "	17 0	5 0 "	7 6	5 0 "	6 6
1832	14 0 "	18 0	7 0 "	11 6	6 0 "	7 3
1833	16 0 "	24 0	7 6 "	12 0	6 6 "	9 0
1834	16 0 "	22 0	10 0 "	13 0	6 0 "	8 6
1835	15 0 "	18 9	10 0 "	13 0	7 0 "	8 0
1836	15 0 "	21 0	9 0 "	12 0	8 6 "	11 0
1837	13 0 "	16 0	8 0 "	12 0	8 0 "	9 6
1838	15 0 "	20 6	10 0 "	13 0	not quoted.	
1839	15 0 "	22 0	10 0 "	12 0	7 0 to	8 3
1840	15 0 "	22 6	11 0 "	12 0	7 0 "	9 3
1841	16 0 "	20 0	9 0 "	11 0	6 0 "	8 0
1842	14 0 "	19 0	7 6 "	8 0	5 6 "	7 0
1843	not quoted.		4 9 "	6 6	not quoted.	
1844	15 0 to	21 0	6 6 "	10 0	5 0 to	8 0
1845	14 0 "	23 0	8 0 "	12 0	6 0 "	8 0
1846	13 0 "	24 0	10 0 "	13 0	8 0 "	9 0
1847	20 6 "	25 0	10 0 "	14 0	8 6 "	9 6
1848	20 0 "	24 0	11 3 "	12 0	8 6 "	10 0
1849	not quoted.		not quoted.		7 0 "	7 6
1850	..		..		7 0 "	0 0
1851	17 6 to	23 0	9 0 to	12 0	6 6 "	8 0
1852	18 6 "	22 0	9 6 "	12 0	4 6 "	7 9
1853	23 0 "	27 0	14 6 "	16 6	8 0 "	11 6
1854	20 0 "	26 0	11 0 "	16 6	8 0 "	10 6
1855	23 6 "	26 6	14 0 "	16 0	10 0 "	11 0
1856	17 0 "	24 0	10 0 "	20 0	7 6 "	10 0
1857	20 0 "	29 0	10 6 "	15 0	9 3 "	11 0
1858	20 0 "	27 6	9 9 "	18 9	8 3 "	10 6
1859	20 0 "	25 0	10 0 "	14 0	8 9 "	11 0
1860	21 0 "	27 3	11 0 "	16 0	10 0 "	13 6
1861	21 0 "	29 0	12 0 "	22 0	6 3 "	14 0
1862	16 9 "	27 0	12 0 "	18 8	6 0 "	12 0

TABLE No. 2.—BLACKFACE SHEEP—*Continued.*

Year.	Wethers.		Ewes.		Lambs.	
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1863	20 0 to	30 6	13 0 to	16 0	8 0 to	11 6
1864	25 0 "	30 0	15 0 "	19 0	10 0 "	13 6
1865	15 6 "	32 6	15 0 "	25 0	10 0 "	17 0
1866	31 6 "	40 0	20 0 "	36 0	13 6 "	22 6
1867	20 0 "	30 6	14 0 "	22 0	7 6 "	13 6
1868	20 0 "	26 0	10 6 "	13 6	7 0 "	13 0
1869	22 0 "	28 0	11 0 "	14 0	6 9 "	9 0
1870	27 0 "	32 6	13 0 "	22 0	8 0 "	14 6
1871	23 0 "	37 0	13 0 "	23 0	11 0 "	16 3
1872	31 6 "	45 0	18 0 "	32 0	12 6 "	18 0
1873	28 0 "	39 0	16 6 "	27 0	7 0 "	16 0
1874	25 0 "	35 0	13 0 "	20 0	7 0 "	14 0
1875	26 6 "	37 6	15 0 "	21 3	9 6 "	17 6
1876	30 0 "	40 0	19 0 "	24 0	13 0 "	20 6
1877	35 0 "	38 9	18 0 "	25 0	13 6 "	23 0
1878	30 0 "	36 0	17 0 "	23 0	12 0 "	22 0
1879	25 0 "	35 9	16 0 "	24 0	10 6 "	20 0
1880	25 0 "	38 0	16 6 "	22 6	10 0 "	17 0
1881	30 0 "	39 0	15 0 "	23 0	10 0 "	15 0
1882	33 0 "	46 0	20 0 "	28 0	12 6 "	18 6
1883	36 0 "	50 6	24 6 "	33 0	14 0 "	21 6
1884	29 0 "	43 6	19 6 "	28 0	12 0 "	19 6
1885	24 0 "	34 0	13 0 "	22 6	10 0 "	15 0
1886	25 0 "	34 0	12 0 "	22 0	10 6 "	16 0
1887	22 0 "	30 0	11 0 "	19 0	8 0 "	13 0
1888	22 0 "	32 0	13 0 "	24 0	10 0 "	15 0
1889	26 0 "	40 0	18 0 "	29 0	13 0 "	22 0
1890	24 0 "	37 0	14 0 "	27 0	10 6 "	19 0
1891	21 0 "	37 0	10 0 "	24 0	7 6 "	15 0
1892	16 0 "	28 6	6 0 "	17 0	3 0 "	10 0
1893	21 0 "	37 0	12 0 "	24 0	7 0 "	14 6
1894	20 0 "	37 6	14 6 "	26 6	8 6 "	16 0
1895	23 0 "	41 0	16 0 "	28 6	9 0 "	17 0
1896	19 0 "	35 4	13 0 "	24 0	6 0 "	13 6
1897	21 0 "	36 6	15 0 "	25 6	7 0 "	14 6
1898	22 0 "	37 0	16 0 "	26 6	8 0 "	15 0
1899	20 0 "	33 6	13 0 "	24 0	5 6 "	13 0
1900	23 0 "	36 0	16 0 "	26 6	8 0 "	15 6
1901	20 0 "	35 0	14 0 "	25 6	6 6 "	14 6
1902	18 6 "	34 0	12 0 "	24 0	6 0 "	14 0
1903	21 0 "	36 0	15 0 "	28 0	7 0 "	16 6
1904	23 0 "	38 6	18 0 "	30 0	8 6 "	17 6
1905	21 6 "	37 0	19 0 "	31 0	9 0 "	18 6
1906	23 0 "	38 0	20 0 "	33 0	10 0 "	19 6
1907	21 0 "	33 6	17 0 "	28 0	8 6 "	17 6
1908	19 6 "	30 0	15 0 "	24 6	8 0 "	16 0
1909	17 0 "	28 0	11 6 "	22 0	6 3 "	13 0
1910	21 0 "	32 6	16 0 "	27 6	8 0 "	17 0
1911	19 0 "	29 6	14 0 "	24 0	7 0 "	15 0
1912	21 6 "	32 6	17 0 "	27 6	9 6 "	17 6
1913	24 6 "	36 0	21 0 "	31 0	12 6 "	21 6
1914	27 0 "	38 6	25 0 "	34 6	15 6 "	24 0
1915	31 0 "	42 6	29 0 "	39 6	17 0 "	25 6
1916	33 0 "	46 6	31 0 "	42 0	19 0 "	27 6
1917	36 0 "	51 0	33 0 "	47 0	21 0 "	30 0
1918	41 0 "	56 0	36 0 "	50 0	27 0 "	33 0

TABLE No. 3.—PRICE OF WOOL, PER STONE OF 24 LB., SINCE 1818.

Year.	Laid Cheviot.	White Cheviot.	Laid Highland.	White Highland.
	s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d.
1818	40 0 to 42 2	..	20 0 to 22 6	..
1819	21 0 " 22 0	..	10 0 " 10 3	..
1820	20 0 " 22 0	..	9 0 " 10 0	..
1821	18 0 " 20 0	..	9 0 " 10 0	..
1822	12 6 " 14 6	..	5 0 " 6 6	..
1823	9 0 " 10 6	..	5 0 " 5 9	..
1824	13 6 " 15 0	..	6 0 " 6 3	..
1825	10 6 " 22 0	..	10 0 " 10 6	..
1826	11 0 " 14 0	..	5 0 " 5 6	..
1827	11 0 " 14 0	..	5 6 " 6 9	..
1828	8 0 " 11 0	..	5 6 " 6 0	..
1829	8 6 " 11 0	..	4 3 " 0 0	..
1830	9 6 " 11 0	..	4 6 " 5 0	..
1831	17 0 " 20 0	..	7 6 " 8 6	..
1832	14 0 " 16 0	..	7 0 " 7 6	..
1833	18 0 " 20 7	..	10 0 " 11 0	..
1834	21 0 " 24 6	..	5 6 " 7 0	..
1835	19 0 " 20 6	..	9 6 " 10 8	..
1836	21 0 " 25 0	..	10 0 " 14 0	..
1837	12 0 " 14 0	..	7 0 " 7 8	..

TABLE No. 3.—PRICE OF WOOL—*Continued.*

Year.	Laid Cheviot.				White Cheviot.				Laid Highland.				White Highland.			
	s.	d.		s.	d.	s.	d.		s.	d.		s.	d.	s.	d.		s.	d.
1838	19	0	to	22	6	..			6	0	to	10	0	..		
1839	18	0	"	20	0	..			8	0	"	12	0	..		
1840	15	0	"	0	0	..			7	0	"	0	0	..		
1841	15	0	"	16	9	..			6	0	"	7	5	..		
1842	12	6	"	14	0	..			not quoted.					..		
1843	9	0	"	11	6	..			5	0	to	6	0	..		
1844	15	0	"	18	0	..			not quoted.					..		
1845	14	6	"	17	6	..			7	6	to	8	6	..		
1846	12	0	"	14	6	..			8	0	"	8	6	..		
1847	12	6	"	14	0	..			not quoted.					..		
1848	9	6	"	11	0	..			4	9	to	0	0	..		
1849	12	0	"	16	6	..			6	0	"	6	3	..		
1850	15	0	"	17	6	..			8	0	"	8	6	..		
1851	12	0	"	16	0	..			8	0	"	9	3	..		
1852	13	0	"	15	0	..			8	0	"	9	0	..		
1853	19	0	"	22	0	..			11	0	"	12	6	..		
1854	12	0	"	15	0	..			7	6	"	8	6	..		
1855	14	6	"	19	0	..			8	6	"	9	0	..		
1856	19	0	"	21	6	..			11	0	"	0	0	..		
1857	19	0	"	24	0	..			13	0	"	14	3	..		
1858	15	0	"	17	0	..			8	9	"	10	0	..		
1859	18	6	"	24	0	..			10	9	"	11	6	..		
1860	22	0	"	32	0	37	0	to 38 0	10	0	"	11	3	..		
1861	19	6	"	27	0	from 30s. upwards.			not quoted.					..		
1862	18	6	"	26	0	30	0	to 37 0	11	6	to	16	0	..		
1863	25	6	"	31	0	38	0	" 42 0	15	3	"	17	6	..		
1864	31	0	"	39	0	47	0	" 54 0	17	6	"	20	0	..		
1865	23	0	"	30	0	44	0	" 45 0	15	0	"	17	0	..		
1866	24	0	"	30	0	30	0	" 38 0	14	0	"	16	0	..		
1867	16	0	"	21	6	not quoted.			not quoted.					..		
1868	19	0	"	26	0	28	0	to 32 0	8	6	to	9	0	..		
1869	18	0	"	26	6	not quoted.			8	6	"	10	0	..		
1870	15	0	"	23	6	25	0	to 26 0	9	6	"	0	0	..		
1871	20	0	"	26	6	30	0	" 34 6	12	0	"	15	0	..		
1872	26	0	"	37	6	40	0	" 48 0	18	0	"	21	0	..		
1873	17	0	"	18	0	34	0	" 40 0	9	0	"	12	0	..		
1874	18	6	"	26	6	30	0	" 34 0	9	6	"	13	0	..		
1875	25	0	"	32	0	34	6	" 36 0	12	6	"	16	0	..		
1876	20	0	"	24	0	30	0	" 34 6	9	6	"	12	0	..		
1877	20	9	"	26	0	28	0	" 30 0	10	0	"	12	0	..		
1878	18	9	"	25	0	27	0	" 32 0	8	6	"	11	6	..		
1879	15	0	"	17	0	prices very low.			7	0	"	0	0	..		
1880	20	0	"	24	0	30	0	to 32 0	10	6	"	11	6	14	0	to 15 0
1881	17	0	"	21	0	27	0	" 30 0	5	0	"	9	6	12	0	" 13 0
1882	14	0	"	18	0	27	6	" 28 0	7	6	"	9	0	13	0	" 14 0
1883	13	0	"	18	0	26	0	" 28 0	6	6	"	8	6	11	6	" 12 6
1884	13	0	"	18	0	26	0	" 28 0	6	6	"	8	6	11	6	" 12 6
1885	12	0	"	17	0	22	6	" 26 0	6	0	"	8	0	11	6	" 12 0
1886	13	0	"	18	0	23	0	" 27 6	6	6	"	8	6	11	6	" 12 0
1887	14	0	"	22	0	23	0	" 28 0	7	0	"	9	0	11	6	" 13 0
1888	13	0	"	20	0	23	0	" 28 0	7	0	"	9	0	11	0	" 12 6
1889	13	0	"	18	0	24	0	" 28 0	7	0	"	9	0	11	0	" 12 6
1890	13	0	"	18	0	24	0	" 28 0	7	0	"	9	0	11	0	" 12 6
1891	12	6	"	18	0	22	0	" 28 0	7	0	"	9	0	11	0	" 12 6
1892	12	0	"	18	0	20	0	" 28 0	7	0	"	8	6	10	6	" 12 0
1893	12	0	"	17	0	20	0	" 27 0	7	0	"	8	0	10	0	" 12 0
1894	12	0	"	16	0	20	0	" 26 0	7	0	"	8	0	10	0	" 12 0
1895	12	0	"	16	0	20	0	" 25 0	7	0	"	8	0	10	0	" 11 6
1896	11	0	"	15	0	19	0	" 24 0	7	0	"	8	0	10	0	" 11 6
1897	11	0	"	14	0	18	0	" 23 0	7	0	"	8	0	10	6	" 12 0
1898	10	0	"	13	0	16	0	" 20 0	7	0	"	8	0	10	0	" 11 6
1899	10	0	"	13	0	13	0	" 18 6	7	0	"	8	0	8	6	" 9 6
1900	9	9	"	12	0	13	0	" 18 6	6	9	"	7	9	8	0	" 9 6
1901	9	0	"	10	0	11	0	" 16 6	5	9	"	6	6	8	0	" 9 0
1902	9	0	"	10	0	11	6	" 17 0	6	0	"	6	6	8	6	" 9 6
1903	10	0	"	12	0	15	0	" 18 0	7	0	"	8	0	11	6	" 12 6
1904	15	0	"	17	0	20	0	" 21 0	9	0	"	10	0	14	0	" 15 0
1905	17	0	"	20	0	24	0	" 26 0	10	0	"	11	0	15	0	" 16 0
1906	18	0	"	21	0	27	0	" 28 6	11	6	"	13	0	16	6	" 17 6
1907			*			22	0	" 24 0	11	0	"	12	6	16	0	" 17 0
1908			*			16	0	" 18 0			†			8	0	" 8 6
1909			*			24	0	" 26 0			†			12	6	" 14 0
1910			*			25	0	" 30 0			†			13	0	" 14 6
1911			*			25	0	" 30 0			†			13	0	" 14 6
1912			*			24	0	" 29 0			†			14	0	" 15 0
1913			*			25	0	" 30 0			†			17	0	" 18 0
1914			*			24	0	" 29 0			†			15	0	" 15 6
1915 ‡			*			42	0	" 46 0			†			21	0	" 22 0

* No Cheviots smeared now. † No Highlands smeared now. ‡ These are July prices.

PRICE OF WOOL PER STONE OF 24 LB.—*Continued.*

	CHEVIOT.				HALF-BRED.				BLACK-FACE.		CROSS-BRED (BLACKFACE EWE AND LEICESTER RAM).			
	HOGG.		EWE AND WETHER.		HOGG.		EWE AND WETHER.		HOGG.	EWE AND WETHER.	HOGG.		EWE AND WETHER.	
	Washed.	Unwashed.	Washed.	Unwashed.	Washed.	Unwashed.	Washed.	Unwashed.			Washed.	Unwashed.	Washed.	Unwashed.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
[1] 1916 . . .	36 6	30 0	33 0	27 6	34 6	28 6	33 0	27 6	23 0	23 0	28 6	25 6	28 6	25 6
CAITHNESS & SUTHERLAND	40 0	32 6	34 0	29 0	35 0	29 0	34 0	28 6						
[1] 1917 . . .	40 6	33 0	37 0	31 0	38 6	31 6	37 0	31 0	25 6	25 6	31 6	28 6	31 6	28 6
CAITHNESS & SUTHERLAND	44 6	36 0	37 6	32 6	39 0	32 6	37 6	31 6						
[1] 1918 . . .	43 6	35 6	39 6	33 0	41 0	33 6	39 6	33 0	27 0	27 0	33 6	30 6	33 6	30 6
CAITHNESS & SUTHERLAND	47 6	38 6	40 0	34 6	41 6	34 6	40 0	33 6						

[1] The prices given were prices fixed by Government, and not free market prices.

PREMIUMS AWARDED BY THE SOCIETY IN 1918.

I.—VETERINARY DEPARTMENT.

CLASS EXAMINATIONS, 1918.

Silver Medals were awarded to the following :—

ROYAL (DICK) VETERINARY COLLEGE.

Chemistry	F. E. Somer, Droitwich, Worcestershire.
Biology	F. E. Somer, Droitwich, Worcestershire.
Junior Anatomy	F. E. Somer, Droitwich, Worcestershire.
Materia Medica	C. V. Watkins, Tredegar.
Pathology	W. C. Miller, Assington, near Colchester.
Hygiene	W. C. Miller, Assington, near Colchester.
Veterinary Surgery	J. M'Allan, M.A., Aberdeen.
Veterinary Medicine	J. M'Allan, M.A., Aberdeen.

GLASGOW VETERINARY COLLEGE.

Junior Anatomy	William M'Aleer, Mount Florida, Glasgow.
Materia Medica	John H. Mason, Shawlands, Glasgow.
Pathology	William John Leyshon, Langside, Glasgow.
Hygiene	William John Leyshon, Langside, Glasgow.
Veterinary Surgery	Alex. L. Robertson, Queenspark, Glasgow.

13 Large Silver Medals, £10, 8s.

II.—DISTRICT COMPETITIONS, 1918.

		£	s.	d.
	Grants of £12 each (Section I.)	0	0	0
12 Districts	—Grants of £15 each (Section II.)	180	0	0
1 "	Special Grants (1 Medal)	0	16	0
1 "	For Silver Medals	2	8	0
	Medals for Cottages, Gardens, &c. (2 Minor)	0	0	0
8 "	Medals for Hoeing Competition, 1917-18	0	19	6
4 "	Medals for Ploughing, 1917-18	1	12	6
65 Long Service Certificates, £27, 12s. 11d., and Medals, £27, 12s. 6d. (1917-18)		55	5	5
		£241	1	5

ABSTRACT OF PREMIUMS.

	£	s.	d.
District Competitions	£185	16	0
Long Service Awards	55	5	5
Veterinary Colleges (13 Medals at 16s.)	10	8	0
	£251	9	5

STATE OF THE FUNDS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

As at 30th NOVEMBER 1918

I. Invested in War Stock, Heritable Bonds, Debenture and Preference Railway Stocks, Bank Stocks, &c. .			£98,214 9 0
II. Estimated Value of Building, No. 3 George IV. Bridge	£3,100 0 0		
III. Estimated Value of Furniture, Paintings, Books, &c.	1,000 0 0		
		4,100 0 0	
IV. Arrears of Subscriptions considered recoverable . .			268 17 6
V. Balances as at 30th November 1918 on Account Current with Royal Bank of Scotland			754 13 6
Amount of General Funds .			£103,338 0 0
VI. Special Funds—			
Tweeddale Medal Fund—			
Heritable Bond, at 5 per cent			£500 0 0
Fife and Kinross Perpetual Gold Challenge Cup Fund—			
£460 Great Central Railway Co. 3½ per cent Second Debenture Stock			400 0 0
Paisley Gold Cup Fund—			
£802, 8s. 8d. North British Railway Co. 3 per cent Debenture Stock			600 0 0
Renfrewshire Gold Cup Fund—			
£668, 14s. 4d. North British Railway Co. 3 per cent Debenture Stock			500 0 0
William Taylor Memorial Prize Fund—			
£401, 2s. 7d. North British Railway Co. 3 per cent Debenture Stock . .	£300 0 0		
Sums on Deposit Receipt with British Linen Bank, being Income for 1915, 1916, 1917, and 1918, not expended . £43 8 8			
Income-tax 1914-17, refunded 7 18 5			
	51 7 1		
		351 7 1	
Amount of Special Funds . .			£2351 7 1

DAVID WILSON, *Treasurer.*
CHARLES M. DOUGLAS, *Chairman of Directors.*
WM. HOME COOK, C.A., *Auditor.*

Edinburgh, *8th January* 1919.

ABSTRACT of the ACCOUNTS of the HIGHLAND and

CHARGE.

1. BALANCES due by Royal Bank of Scotland on Account Current at 30th November 1917			£90 11 5
2. ARREARS of Subscriptions outstanding at 30th November 1917		£285 3 0	
Whereof due by Members who have compounded for life, and whose arrears are thereby extinguished . . .	£11 0 0		
Sums ordered to be written off .	94 8 0		
		105 8 0	
			179 15 0
3. INTERESTS AND DIVIDENDS—			
(1) Interests—			
On Heritable Bonds, less Income-tax .		£652 10 0	
On Railway Debenture and Preference Stocks, do.		1,269 9 1	
On Colonial Government Stocks, do. .		335 15 11	
On Annuity Stocks, do. . . .		52 8 6	
On Edinburgh Corporation Loans, do. .		29 6 1	
On War Stock, do.		499 19 10	
		£2,839 9 5	
(2) Dividends—			
On Bank Stocks, less Income-tax . .		837 5 2	
			3,676 14 7
4. SUBSCRIPTIONS—			
Annual Subscriptions		£1,264 7 6	
Life Subscriptions		667 13 0	
			1,932 0 6
5. 'TRANSACTIONS'—Sales per Blackwood & Sons . . .			10 15 0
6. INCOME-TAX repaid for year to 5th April 1918 . . .			1,042 16 7
7. DEMONSTRATION of Agricultural Tractors—			
Board of Agriculture for Scotland . . .		£500 0 0	
Ancona Motor Co. Limited		2 2 0	
			502 2 0
8. RECEIPTS in connection with Edinburgh Show, 1918 (postponed) .			78 6 9
SUM OF THE CHARGE . .			£7,513 1 10

EDINBURGH, 8*th January* 1919.

AGRICULTURAL SOCIETY of SCOTLAND for the Year 1917-1918.

DISCHARGE.

1. Establishment Expenses—			
Salaries and Wages—Secretary, £650; Chief Clerk, £375; Second Clerk, Special Allowance, £100; Extra Clerk, £78; Typist, £74, 3s. 4d.; Messenger, £69; Retiring Allowance to Messenger, £52		£1,398	3 4
Feu-duty, £28; Taxes, £81, 4s.		109	4 0
Coals, Gas, Electric Light, &c.		47	18 7
Repairs and Furnishings, £53, 15s. 7d.; Telephone and Telegrams, £20, 5s. 3d.; Insurance, £26, 12s. 1d.; Special Annuity Premiums, £85, 16s.		186	8 11
		£1,741	14 10
2. Fee to Auditor of Accounts for 1916-1917		75	0 0
3. Education—National Diploma in Agriculture		131	7 0
4. Chemical Department—			
Fee to Chemist	£160 0 0		
Analyses to Members and Expenses	233 19 1		
Mineral Phosphate Investigation	20 18 2		
Printing	6 8 6		
		361	5 9
5. Veterinary Department—			
Medals to Students	£10 8 0		
"Grass Sickness" Investigation	73 4 2		
		83	12 2
6. Botanical and Entomological Department		25	6 0
7. National Diploma in Dairying—			
Expenses of Examination held at Kilmarnock	£189 2 8		
Less Entry Fees	46 4 0		
		142	18 8
8. Society's 'Transactions'		126	7 2
Note.—The 1918 Volume of Transactions has not yet been published; thus the Accounts for Printing and Binding will be shown in the 1918-19 Account of Charge and Discharge.			
9. Ordinary Printing, £114, 9s.; Advertising, £45, 10s. 9d.; Stationery, Books, &c., £87, 11s. 8d.; Postages, £95; Bank Charges, £7, 8s. 7d.		350	0 0
10. Salary to Consulting Engineer		75	0 0
11. Grants to Public Societies		45	10 0
12. Miscellaneous Payments		220	17 3
13. Investments made		2,500	0 0
14. Premiums and Medals for Local Shows and District Competitions		211	1 0
15. Certificates and Medals for Long Service		66	3 11
16. Demonstration of Agricultural Tractors		220	16 11
Note.—Previous payments to the extent of £918, 18s. 8d. appeared in the 1916-17 Accounts.			
17. Arrears removed from Subscription List at 30th November 1918		74	11 6
18. Arrears outstanding at 30th November 1918		268	17 6
19. Payments in connection with Edinburgh Show, 1918 (postponed)		38	4 8
20. Balances at 30th November 1918 on Current Account with the Royal Bank of Scotland—			
Ordinary Account	£671 11 2		
Edinburgh Show, do.	83 2 4		
		754	13 6
Sum of the Discharge		£7,513	1 10

DAVID WILSON, *Treasurer.*
CHARLES M. DOUGLAS, *Chairman of Directors.*
WM. HOME COOK, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS of the

CHARGE.

I. FUNDS as at 30th November 1917—			
Amount of Heritable Bond at 5 per cent			£3,500 0 0
£3,193, 6s. 8d. North British Railway Company 3 per cent Debenture Stock, purchased at			2,650 0 0
£550 Lancashire and Yorkshire Railway Company 3 per cent Debenture Stock, purchased at			611 10 6
£500 Queensland 3½ per cent Inscribed Stock, 1950-70, purchased at			450 1 0
£190 London and North-Western Railway Company 4 per cent Guaranteed Stock, purchased at			259 1 11
Temporary Loan with Corporation of Edinburgh			180 0 0
			£7,650 13 5
BALANCE on Account Current with Royal Bank of Scotland			229 16 7
			£7,880 10 0
II. INTEREST ON INVESTMENTS—			
On £3,500 on Heritable Bond for year to Martinmas 1918		£175 0 0	
Less tax		48 2 6	
		£126 17 6	
On £3,193, 6s. 8d. North British Railway Company 3 per cent Debenture Stock, for year	£95 16 0		
Less tax	26 17 3		
		68 18 9	
On £550 Lancashire and Yorkshire Railway Company 3 per cent Debenture Stock, for year	£16 10 0		
Less tax	4 6 8		
		12 3 4	
On £500 Queensland 3½ per cent Inscribed Stock, 1950-70, for year	£17 10 0		
Less tax for half-year to 31st December 1917	2 3 9		
		15 6 3	
On £190 London and North-Western Railway Company 4 per cent Guaranteed Stock, for year	£7 12 0		
Less tax	1 19 11		
		5 12 1	
On £180 lent to Edinburgh Corporation, for half-year to 15th May 1918	£3 6 6		
Less tax	0 19 11		
		2 6 7	
On £100, 5 per cent Registered National War Bonds, from 14th December 1917 to 1st October 1918, free of tax		3 19 7	
On £200, 5 per cent Registered National War Bonds, from 4th June 1918 to 1st October 1918, free of tax		3 5 2	
			238 9 3
III. INCOME TAX repaid for year to 5th April 1918			77 15 1
IV. INVESTMENTS REALISED—			
Temporary Loan with Edinburgh Corporation, 1918, May 15. On this date		£180 0 0	
SUM OF CHARGE			£8,196 14 4

EDINBURGH, 8*th January* 1919.

ARGYLL NAVAL FUND for the Year 1917-1918.

DISCHARGE.

I. ALLOWANCES to the seven following Recipients—

M. H. Hopkins (seventh year)	£20 0 0
I. K. D. Hutchison (fourth year)	40 0 0
T. J. S. Bell (third year)	20 0 0
R. E. S. Hugonin (third year)	40 0 0
E. C. G. Greenlees (third year)	40 0 0
J. G. MacLean (third year)	40 0 0
A. F. Campbell (first half year)	20 0 0
	£220 0 0

II. ADVERTISING—

Henry Munro Ltd., for advertising	7 10 6

III. INVESTMENTS made—

5 per cent Registered National War Bonds, 1922—		
1917, Dec. 14. On this date	£100 0 0	
1918, June 4. Do.	200 0 0	
	£300 0 0	

IV. FUNDS as at 30th November 1918—

Amount on Heritable Bond at 5 per cent	£3,500 0 0	
£3,193, 6s. 8d. North British Railway Company 3 per cent Debenture Stock, purchased at	2,650 0 0	
£550 Lancashire and Yorkshire Railway Company 3 per cent Debenture Stock, purchased at	611 10 6	
£500 Queensland 3½ per cent Inscribed Stock, 1950-70, purchased at	450 1 0	
£190 London and North-Western Railway Company 4 per cent Guaranteed Stock, purchased at	259 1 11	
5 per cent Registered National War Bonds, 1922	300 0 0	
	£7,770 13 5	
Balance on Account Current with Royal Bank of Scotland	198 10 5	
		7,969 3 10
SUM OF DISCHARGE		£8,196 14 4

DAVID WILSON, *Treasurer.*
CHARLES M. DOUGLAS, *Chairman of Directors.*
WM. HOME COOK, C.A., *Auditor.*

STATE OF RECEIPTS AND PAYMENTS in connection with the Edinburgh Show, 1918 (postponed).

RECEIPTS.

1. Interest from Special Cup, &c., Funds—		
Fife and Kinross Gold Cup		£11 17 6
Renfrewshire Gold Cup		14 8 8
Paisley Gold Cup		17 6 6
Tweeddale Gold Medal		18 2 6
"William Taylor" Memorial		8 13 2
		£70 8 4
2. Income Tax recovered on "W. Taylor" Memorial Fund interests, 1914-17		7 18 5
Sum of Receipts		£78 6 9

PAYMENTS.

Storage and Insurance—			
1. D. M'Andrew & Co., storage of plant to Whitsunday 1918	£10 15 0		
Do. insurance of do.	2 5 0		
Do. aircraft insurance of do.	1 2 6		
		£14 2 6	
2. North British and Mercantile Insurance Co., insurance of—			
Gold Cups—Burglary	£4 5 0		
Do. —Fire	2 2 6		
Show Staff	1 3 1		
		7 10 7	
3. Income from "W. Taylor" Memorial Fund, transferred to Fund Account		8 13 2	
4. Income Tax recovered, do. do.		7 18 5	
Sum of Payments			38 4 8
Balance of Receipts			£40 2 1

DAVID WILSON, *Treasurer.*
CHARLES M. DOUGLAS, *Chairman of Directors.*
WM. HOME COOK, C.A., *Auditor.*

Edinburgh, *8th January* 1919.

VIEW OF RECEIPTS AND PAYMENTS
For the Year 1917-1918.

RECEIPTS.

1.	Annual Subscriptions and Arrears received			£1,100	13 6
2.	Life Subscriptions			667	13 0
3.	Interests and Dividends—				
	Interests	£2,839 9 5			
	Dividends	837 5 2			
				3,676	14 7
4.	Sales of 'Transactions'			10	15 0
5.	Income Tax repaid for year to 5th April 1918			1,042	16 7
6.	Demonstration of Agricultural Tractors			502	2 0
7.	Receipts in connection with Edinburgh Show, 1918 (postponed)			78	6 9
	Sum of Receipts			£7,079	1 5

PAYMENTS.

1.	Establishment Expenses—				
	Salaries and Wages	£1,398 3 4			
	Feu-duty, Taxes, Coals, Gas, Repairs and Furnishings, Insurance, &c.	343 11 6			
		£1,741	14 10		
2.	Fee to Auditor of Accounts for 1916-1917	75	0 0		
3.	Education—N.D.A. Examination	131	7 0		
4.	Chemical Department	361	5 9		
5.	Veterinary Department	83	12 2		
6.	Botanical and Entomological Department	25	0 0		
7.	Dairy Department	142	18 8		
8.	Society's 'Transactions'	126	7 2		
9.	Ordinary Printing, Advertising, Stationery, Books, &c., Postages, and Bank Charges	350	0 0		
10.	Salary to Consulting Engineer	75	0 0		
11.	Grants to Public Societies	45	10 0		
12.	Miscellaneous Accounts	220	17 3		
13.	Premiums and Medals for Local Shows and District Competitions	211	1 0		
14.	Certificates and Medals for Long Service	66	3 11		
15	Demonstration of Agricultural Tractors	220	16 11		
16.	Payments in connection with Edinburgh Show, 1918 (postponed)	38	4 8		
	Sum of Payments			3,914	19 4
	Balance of Receipts			£3,164	2 1

DAVID WILSON, *Treasurer.*
CHARLES M. DOUGLAS, *Chairman of Directors.*
WM. HOME COOK, C.A., *Auditor.*

Edinburgh, 8*th January* 1919.

PROCEEDINGS AT BOARD MEETINGS.

MEETING OF DIRECTORS, 3RD APRIL 1918.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present.—*Vice-President*—Sir Archibald Buchan Hepburn, Bart. *Ordinary Directors*—Mr William Carrick; Mr George W. Constable; Mr Charles Douglas, D.Sc., C.B.; Mr John Elliot; Mr William Elliot; Lieut.-Colonel A. T. Gordon; Mr A. F. Irvine; Mr Murray Little; Mr John M'Caig; Mr Hugh Martin; Mr William Mungall; Mr John C. Robertson; Mr G. Bertram Shields; Mr John P. Sleigh; Mr R. D. Thom. *Extraordinary Directors*—Mr Harry Armour; Mr Thomas Blair; Mr John G. Dudgeon; Sir John R. Findlay; Mr A. B. Leitch; Mr A. D. Macdonald; Mr Peter M'Intyre; Mr Robert Macmillan; Mr George G. Mercer, J.P.; Sir Hugh Shaw-Stewart, Bart., C.B.; Mr Phipps O. Turnbull. *Hon. Secretary*—Mr Alexander Cross. *Treasurer*—Dr David Wilson. *Chemist*—Dr J. F. Tocher.

The late Sir Charles Bine Renshaw.

Before proceeding with the business of the Meeting, the CHAIRMAN made sympathetic reference to the death of Sir Charles Bine Renshaw, Bart., who, he said, was a man of many gifts, and deservedly esteemed. Many of the Directors would remember the admirable services he rendered to the Society as an Extraordinary Director, especially in connection with the Paisley Show.

He submitted the terms of a suitable resolution, which was unanimously approved, the members present upstanding, and the Secretary was instructed to send a copy thereof to Lady Bine Renshaw.

Letters.

Women's Rural Institutes.—A letter was read from Mrs Blair, Hoprig Mains, thanking the Directors for the promised grant of £50 for the purposes of the Women's Rural Institutes movement.

Milk Prices.—A letter was read from the Ministry of Food to the effect that the representations made by the Directors with regard to milk prices during the summer months had been duly noted.

Price of Sheepskins.—A letter, dated 26th March, from the Wester Ross Farmers' Club, with regard to the current prices of sheepskins, was read and remitted to the Special Committee on Wool Prices for consideration and report.

Heifer Calves of Ayrshire Breed.

A letter, dated 26th March, from the Assistant Chief Live Stock Commissioner, in reply to the representation made by the Directors on 6th February, was read. This letter referred to certain negotiations which had been proceeding between the Live Stock Commissioner for Scotland and a deputation of dairy farmers from the south-western district of Scotland. No mention was made in the letter that an Order (No. 325) had been issued on 16th March, coming into force on 18th March, whereby all calves of the Ayrshire breed were excluded from the operations of the Live Stock (Restriction of Slaughter) Order.

Mr JOHN M'CAIG said it was an extraordinary thing that neither the farmers who were interested in the matter, nor the members of that Board, had received any intimation that since 16th March last Ayrshire calves had been deleted from the Order.

Mr MURRAY LITTLE said the Directors should express their serious disappointment that intimation had not been received, in view of the fact that correspondence had been going on at the date mentioned.

It was agreed that the Secretary should write to the Ministry of Food expressing the surprise and disappointment of the Directors that no intimation had been received of the rescinding of the Order in so far as it applied to Ayrshire calves.

Agricultural Advisory Committee.

A letter was read, dated 26th March, from Mr W. Anker Simmons, of the Ministry of Food, inviting the Society to appoint one representative on an Agricultural Advisory Committee which Lord Rhondda had decided to set up in connection with the Ministry.

The SECRETARY reported that on receipt of the letter he had written in reply that, as the Royal Agricultural Society of England was to have three representatives, and as this Society was the corresponding Society in Scotland, discharging the same functions, and with a membership relatively not inferior, it appeared that a fair representation would be two members. No reply had yet been received to that letter.

The Directors approved of the Secretary's action.

On the motion of Mr ALEXANDER CROSS of Knockdon, the Chairman was unanimously appointed as the Society's representative on the proposed Committee.

Nomination of Directors.

The SECRETARY submitted the usual Report on Meetings of Members held in the various Show divisions for the nomination of Ordinary Directors to represent these divisions.

Release and Exemption of Veterinary Students.

A Minute of Meeting of Science Committee, dated 3rd April, was read and approved.

The Minute stated that the Committee had considered the letter, dated 28th February, from the Secretary of the Royal College of Veterinary Surgeons, together with the accompanying correspondence which had passed between the College, the War Office, and the Ministry of National Service, with regard to the release and exemption of veterinary students, in order that they might complete their professional studies. The Committee were agreed that, under present circumstances, which were different from those which obtained at the time of the correspondence, they were not in a position to recommend that the Directors support the application of the Royal College of Veterinary Surgeons; but that if the College could see its way to comply with the request of the Ministry of National Service, to submit names and particulars of veterinary students who fell within the classes named by the Ministry as those they would be prepared to recommend for release, the Society would be glad to support such application if any difficulty arose.

Mechanical Drainage.

A Minute of Meeting of Implements Committee, dated 3rd April, was submitted and approved.

The Minute stated that a reply had now been received from the U.S. Department of Agriculture to the inquiry regarding the experience in America with drain-digging or ditching machines. Various illustrated catalogues and reports had also come to hand. It had been remitted to the following Sub-Committee to consider these documents and prepare a Report thereon: Mr G. B. Shields, *Convener;* Mr J. T. M'Laren, Mr D. M. Wallace, Mr R. H. N. Sellar, Professor Stanfield, and the Secretary.

Motor Ploughs.

Mr MURRAY LITTLE drew the attention of the Directors to the necessity for action by the Board of Agriculture for Scotland whereby facilities be secured to makers of tractor ploughs to turn out these in greater numbers, and more suitable to the different classes of land, and that men be trained for the work.

In the course of a statement on the subject Mr Murray Little explained that he had brought this matter forward as the result of a request made at a Meeting of

Members in the Dumfries Show Division. In considerable areas of that division there were thin soils which required careful ploughing, and the ploughs sent out with the Government tractors were often unsuited to these special conditions. Delays had also occurred when a tractor or plough broke down because they could not get the necessary priority certificates for the execution of repairs. Men were required who not only understood the tractor, but who had a sense of what was good and what was bad ploughing. The whole rotation was affected if the land were badly ploughed.

It was agreed to remit the matter to the Implements Committee for consideration and report.

Fiars Court Procedure.

Mr George W. Constable submitted the following Motion, of which he had given notice:—

"That the Directors call the attention of the Secretary for Scotland to the procedure at Peebles Fiars Court on Thursday, 7th March, in connection with the striking of Fiars Prices for Oats, and request him to take such steps thereanent as he may deem advisable."

In speaking to the motion, Mr Constable gave an account of the proceedings at the Fiars Court in question.

The Motion was unanimously adopted.

Law and Parliamentary Committee.

A Minute of Meeting of Committee, dated 2nd April, was submitted and approved.

The Minute dealt, *inter alia*, with the following matters:—

Milk.—The Committee desired that special attention be directed by the representatives of the Society (Dr Douglas and Mr M'Caig) at their proposed meeting with the Committee on the Production and Distribution of Milk to the following points:—

(1) The influence of the restriction of price on milk production.
(2) The necessity for caution in the prosecution of the policy of ploughing up pasture, having regard to the increase in the costs of production which must result from an excessive dependence of cows on stall-feeding.
(3) The desirability of encouraging the establishment of country milk depots, and the inadequacy of the proposals so far made by the Government with this object. The difficulty of developing this proposal in present circumstances.
(4) The necessity for taking effective measures to provide a supply of artificial feeding-stuffs for dairy cows if milk production is to be maintained next winter.

Education (Scotland) Bill.—The Report by the Scottish Council of Agriculture on this Bill, and also a letter from the Morayshire Farmer Club, had been considered. The Committee recommended the Board to receive and approve of the former Report, and to represent further that there is a very widely-expressed objection on the part of agriculturists to the passing of this Bill into law at the present time.

Sale of Stock by Dead Weight.—The Committee recommended that the Directors disapprove the proposal to make the sale of fat stock by dead weight compulsory, having regard to the probable effect on production of the suspicion and uncertainty inseparable from its administration.

Potato Order, 1918.—The Committee recommended the Directors to write to the Food Controller to the effect that great uncertainty is felt as to the administration of the Order, and that in particular they think producers should be enlightened with regard to the following points:—

(1) In what way the Government proposes to take possession of the crop on 1st November.
(2) How it is proposed to ascertain the quantity at that date.
(3) How it is proposed to secure producers against loss before delivery is effected.

Further, to represent that there are practical difficulties in the working of the proposed Committees of Valuation, which the Committee think insuperable, and calculated to cause much uncertainty.

Visits of Overseas Soldiers.

A letter, dated 6th March, from Major-General Russell, Commanding the New Zealand Division in France, with regard to the proposed visits of Overseas Soldiers to well-known studs, herds, and flocks in this country, was submitted.

The SECRETARY stated that he was in communication with the Divisional Food Commissioner as to the difficulty of providing meals for the visitors.

After discussion, it was left in the hands of the small Committee appointed at last Meeting to consider the matter and bring forward proposals.

Municipal and Communal Piggeries.

A letter was read from the Live Stock Commissioner for Scotland inviting the Society to send a representative to a Meeting in Glasgow on 25th March, to consider the question of Municipal and Communal Piggeries and the Utilisation of Waste Food Refuse for Pig-feeding.

The SECRETARY said that as the Chairman was unable to attend the Meeting, he had attended on behalf of the Society. The Meeting was one of local authorities in the western area, and he had attended simply to secure that nothing should be done which would in any way interfere with the interests of those who at present carried on pig-feeding as a business, and collected waste food for the purpose. This object was amply secured by the insertion in the resolution passed at the Meeting of a clause to the effect that any collection of waste food which might be instituted should not interfere in any way with the present supply of such food to pig-feeders.

The Secretary's action was approved.

Exhibition of Farm Machinery.

Mr A. B. LEITCH read an extract from a newspaper regarding a permanent exhibition of up-to-date Farm Machinery organised by a University in Canada. He thought the Government should be asked to provide such an exhibition in this country, as demonstrations of implements were quite as important as exhibitions of plants and animals. He moved that the matter be remitted to the Implements Committee for consideration and report, and this was agreed to.

MEETING OF DIRECTORS, 1st MAY 1918.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present.—Ordinary Directors—Mr George W. Constable; Mr Alexander Cowan; Mr Charles Douglas, D.Sc., C.B.; Mr John Elliot; Mr William Elliot; Mr James M'Queen; Mr Hugh Martin; Mr William Mungall; Mr William Neilson; Mr Robert Park; Mr G. Bertram Shields; Mr D. A. Stewart; Mr R. D. Thom. *Extraordinary Directors*—Mr Harry Armour; Mr Thomas Blair; Mr John G. Dudgeon; Mr Hugh M. Leadbetter; Mr A. B. Leitch; Mr A. D. Macdonald; Mr J. T. M'Laren; Mr George G. Mercer, J.P.; Sir Hugh Shaw-Stewart, Bart., C.B.; Mr Phipps O. Turnbull. *Hon. Secretary*—Mr Alexander Cross. *Engineer*—Professor R. Stanfield. *Chemist*—Dr J. F. Tocher.

The late Earl of Home.

Before proceeding with the business of the Meeting, the CHAIRMAN made sympathetic reference to the death of the Earl of Home, a former Vice-President of the Society, which had taken place the previous day. He submitted the terms of a resolution, which was unanimously approved, the members present upstanding, and the Secretary was instructed to send a copy thereof to the Countess of Home.

Letters.

Exemption of Veterinary Students.—A letter was read from the Royal College of Veterinary Surgeons acknowledging intimation of the decision of the Directors arrived at at last Meeting, and stating that the College had decided not to take any further action in the matter at present.

Heifer Calves of Ayrshire Breed.—A letter was read from the Chief Live Stock Commissioner expressing regret that no mention had been made in his letter of 26th March of the rescinding, on 16th March, of the Live Stock (Restriction of Slaughter) Order, in so far as it related to Ayrshire Calves.

Wild White Clover.—A letter, dated 20th April, from Mr George Wood, Gloucestershire, was read, offering to provide Wild White Clover Seed for experimental plots

throughout the country. The letter was remitted to the Science Committee for consideration and report.

Summer Prices of Milk.—An intimation was received from the Divisional Food Commissioner to the effect that applications for an investigation into the cost of Milk production in any area must be lodged not later than Wednesday, 8th May.

Seed Testing and Registering Station.

A letter, dated 23rd April, was read from the Board of Agriculture for Scotland, with reference to the proposed Station for the testing and registration of agricultural plants, stating that the Society was entitled to a representation of three members on the proposed Committee of Management, and that the Board would be glad to receive the names of the three representatives appointed.

On the motion of the CHAIRMAN, the letter was remitted to the Science Committee to consider and recommend a definite basis for the selection of members of this Committee, and report to next Meeting.

Grain Drying Sheds.

A letter, dated 29th April, was read from the Board of Agriculture for Scotland, enclosing copies of letters addressed by the Board to Secretaries of District Agricultural Executive Committees and other bodies. The amount of material for which the Board had been able to arrange was sufficient for the erection of approximately fifty sheds of size 120 feet long by 24 feet wide by 16 feet high, or a proportionately larger number of smaller sheds. The co-operation of members of the Society was invited in securing the allocation of the sheds amongst the most suitable holdings.

The CHAIRMAN said the Directors would recognise the satisfactory manner in which the Board of Agriculture had responded to their suggestion. It was satisfactory to know that they had succeeded in one part of what they were asked to do—viz., the securing of priority in the use of material for this important purpose. They had not, however, made any reference to the financial aspect of the matter, which involved assistance from the Treasury to reduce the rate of interest on the loans for the erection of the sheds, but he did not think they were neglecting it.

Mr GEORGE W. CONSTABLE, Traquair, also referred to this point, and suggested that in acknowledging receipt of the letter the Secretary should ask the Board of Agriculture upon what terms loans for erection of the sheds would be obtainable.

This was agreed to.

Shortage of Railway Sacks for Grain.

A letter was submitted from the Board of Agriculture for Scotland, enclosing copy of a letter from the Railway Executive Committee, in which it was pointed out that the demands made upon the Highland Railway Company for grain sacks during the last two years had been abnormally high on account of the stoppage of shipping to the North of Scotland. The letter proceeded to state that there was an obligation upon traders themselves to look after the supply of sacks, and not throw the burden entirely on the Railway Company.

The CHAIRMAN said there was a certain misunderstanding indicated by this letter, which seemed to be based on the idea that something in the way of aspersion on the Highland Railway Company was intended by the Directors in transmitting the letter from the Wester Ross Farmers' Club. Nothing of that kind was in their minds. They realised that the difficulty referred to was general, as sacks were scarce everywhere. While the Directors did not wish to reflect on the Railway Companies, and were aware that the difficulties in obtaining sacks were very great, they should point out that the practice of Railway Companies supplying sacks was one of long standing, and one not disadvantageous to the Companies themselves, and that the desire of the Directors was to induce the Board of Agriculture to help the Railway Companies to obtain such sacks as were required for the purpose.

The Chairman's suggestion was approved of.

Agricultural Advisory Committee.

The SECRETARY reminded the Directors that, as reported at last Meeting, he had pointed out to the Ministry of Food that a fair representation of this Society on the Agricultural Advisory Committee to the Ministry of Food would be two members. He had now received a telegram and letter from Mr Anker Simmons, agreeing to this proposal, and inviting the Directors to appoint a second representative.

On the motion of Mr G. B. SHIELDS, Mr William Elliot, Lanark, was unanimously elected as the Society's second representative on the Committee.

Forestry.

A Minute of Meeting of Committee, dated 1st May, was read and approved.

The Minute contained a series of Resolutions relating to the Report of the Forestry Sub-Committee of the Reconstruction Committee, and recommended that these be transmitted to the Minister of Reconstruction, the Secretary of the Cabinet, the Secretary for Scotland, the Board of Agriculture for Scotland, the Royal English Arboricultural Society, and the Royal Scottish Arboricultural Society.

The Resolutions were as follows:—

"(1) The Directors of the Highland and Agricultural Society welcome the scheme of Afforestation outlined in the Report of the Forestry Reconstruction Sub-Committee and the recent announcement of the Minister of Reconstruction in Edinburgh that the Government has framed proposals for this purpose on bold lines.

"(2) The Directors recognise the need for a Central Forest Authority to formulate a comprehensive Forest Policy for the United Kingdom, to co-ordinate education and research and to allot funds for schemes of planting, and welcome the proposal of the Forestry Sub-Committee that this control, which now resides in the Development Commissioners, who have many other interests in their charge, should be transferred to a special authority dealing with Forestry alone, having technical knowledge and experience, and endowed with adequate funds and powers.

"(3) The Directors, regarding Agriculture and Forestry as twin branches of rural development, desire that, subject to the above proposal, the Board of Agriculture should remain the Executive Department for Forestry in Scotland, provided that to meet this important extension of its work the Forestry Section of the Board should be strengthened so as to form a regular department under a Forestry Commissioner.

"(4) The Directors would point out that the Society's interest in Forestry dates from 1809, when premiums were first offered to landowners who would extend their forest areas. Such encouragement has been continuously given since that time, and a considerable number of the areas which are now being felled for national purposes owe their origin to this encouragement. The Society contributed over £1600 towards the endowment of a Chair of Forestry in Edinburgh University, and made a payment of £50 per annum for a considerable period towards the salary of the lecturer. The Society has granted a Certificate in Forestry since 1870. Many valuable papers on Forestry have been printed in the Society's 'Transactions.' For a number of years an Exhibition of Forestry products (organised by the Royal Scottish Arboricultural Society) has been held in the Society's Showyard."

The CHAIRMAN, in the absence of Sir Archibald Buchan Hepburn, Convener of the Committee, moved approval of the Minute. He said they could not approach that question without being aware that it had been the subject of a certain amount of controversy, and he thought they would recognise that the Forestry Committee had approached it with the view of reconciling, so far as they were capable of reconciliation, opposite opinions, and bringing them to some kind of consistent whole. There was, of course, a very natural, and he thought inevitable, objection to the idea of any kind of control of matters affecting Scottish Agriculture independently of the Scottish Board of Agriculture. The choice in this case lay between control by the Development Commissioners, who were not specially a Forestry body, but dealt with roads and Agricultural improvement, and many other matters, and, on the other hand, an expert body. It was the wish of those who had most interest in Forestry that the control should be centred in a body specially designed to deal with, and exclusively interested in, Forestry matters. On the other hand, it was the view of the Committee that it was impossible to separate the interests of Agriculture from those of Forestry. They believed that what was essential was that there should be an expert central body, and that the executive work should be carried out by the Board of Agriculture for Scotland.

Sir HUGH SHAW-STEWART, Bart., seconded approval of the Minute. He thought the considered Resolutions of the Forestry Committee were such as the Directors might well adopt. He maintained that the present system was totally inefficient, and emphasised the need of a Central Expert Authority to direct and be entrusted with funds for the carrying out of national afforestation.

The Minute was approved.

Science.

A Minute of Meeting of Committee, dated 1st May, was read and approved.

The Minute recommended: (1) *Fish Meal*—That an application from the Association of Fish Meal, Fish Guano, and Fish Oil Manufacturers should be passed on to the Agricultural Colleges, with a strong recommendation that trials with Fish Meal in the feeding of cattle and sheep should be carried out; (2) *Grass Sickness amongst Horses*—That the Directors authorise (1) the examination of the water-supplies on

certain farms; (2) the examination of blood from horses affected; and (3) the seeding of at least two acres of a field in the district in accordance with Professor M'Alpine's prescription, for the purpose of having the toxic effect of the grass, including clover, grown on the field next year, tested by actual experiment with horses; and further that, in addition to the expenses previously authorised, the expenditure of a sum not exceeding £30 be authorised for the purposes of the water and blood examinations above mentioned.

Implements.

A Minute of Meeting of Committee, dated 1st May, was read and approved.

The Minute recommended that the Directors represent to the Board of Agriculture for Scotland that steps should be taken to ascertain, through the District Agricultural Committees, if the types of tractor ploughs required in their districts were being obtained, and if not, what types were required; and that on obtaining this information the Board of Agriculture should endeavour to obtain facilities for makers of these ploughs to turn them out in greater numbers. Further, to ask the Board of Agriculture to make arrangements whereby, during the period in which the tractors are unemployed between spring and harvest work, the men handling these tractors be brought together with a view to their being instructed in running repairs on the machines under their charge. Such centres would also be available for the training of additional men for this work.

Law and Parliamentary Committee.

A Minute of Meeting of Committee, dated 1st May, was read and approved.

The Minute dealt with the following matters: *Potato Order*, 1918.—The terms of a letter to Major Belcher, Director of Vegetable Supplies, Ministry of Food, were suggested, in reply to a letter from him, dated 10th April, in which he asked the Directors to indicate in more detail the practical difficulties which they considered to be insuperable in the working of the proposed Committees of valuation. It was further recommended that Mr G. B. Shields be appointed as the Society's representative on an Allocation Authority to be set up in Scotland by the Food Controller to perform certain duties regarding the distribution of the 1918 potato crop. *Cattle Prices.*—The Minute recommended that the Directors represent to the Food Controller that, in view of the full supplies of fat cattle then available and the prospect of later scarcity, there should be a continuous rise of 1s. per cwt. per week on the price of the best fat cattle from that date till the end of July. With regard to the existing and prospective supply of store cattle, the Committee recommended the Directors to represent to the Food Controller: (1) That the slaughter of immature cattle which was then being carried out in Ireland was a serious waste of the beef supply; (2) that the prospects of cultivation in 1919 (especially those of potato growing) were seriously imperilled by the lack of manure that would necessarily arise from the shortage of store cattle, and that on this account also, in order to maintain the supply of store cattle, the slaughter of immature animals should be prevented.

Visits of Overseas Soldiers.

The CHAIRMAN said the Committee had found it very difficult to organise the visits of Overseas Soldiers on the scale and in the manner originally proposed.

Mr SHIELDS explained that the difficulties of feeding the visitors, and more especially of their transport from farm to farm, were practically insurmountable. Application had been made to the Food Controller and to the Army Transport Department for assistance, but without success. If they were to proceed with the scheme it would require to be on the lines simply of preparing a list of farmers and stockowners who were willing to receive visits, and so putting the Overseas visitors in touch with the farms. Visits would not be paid without notice. Prospective visitors would communicate with the farmers beforehand, and make arrangements for the visit.

On the suggestion of the Chairman the remit was continued to the Committee, who were to draw up an advertisement for insertion in the Agricultural press inviting farmers and stockowners who were willing to receive visits to notify the fact to the Secretary, who would send them a schedule to fill up with particulars for insertion in the list to be prepared.

Straw for Paper-making.

Dr J. F. TOCHER exhibited a collection of chaff, sand, &c., which had been found in a quantity of straw supplied for paper-making, and pointed out the undesirability of straw containing such being supplied to paper-makers.

MEETING OF DIRECTORS, 5TH JUNE 1918.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present.—*Vice-President*—Sir Archibald Buchan Hepburn, Bart. *Ordinary Directors*—Mr George W. Constable; Mr Charles Douglas, D.Sc., C.B.; Mr James Elder; Mr John Elliot; Mr Alexander Forbes; Col. Alex. T. Gordon; Mr A. F. Irvine; Mr Murray Little; Mr John M'Caig; Mr Hugh Martin; Mr William Mungall; Mr John C. Robertson; Mr G. Bertram Shields; Mr D. A. Stewart; Mr R. D. Thom. *Extraordinary Directors*—Mr Harry Armour; Mr Thomas Blair; Mr John G. Dudgeon; Sir John R. Findlay; Sir Robert K. Inches; Mr Hugh M. Leadbetter; Mr A. B. Leitch; Mr A. D. Macdonald; Mr Peter M'Intyre; Mr Phipps O. Turnbull. *Honorary Secretary*—Mr Alexander Cross. *Chemist*—Dr J. F. Tocher. *Treasurer*—Dr David Wilson. *Auditor*—Mr Wm. Home Cook, C.A.

The late Mr William Neilson.

Before proceeding with the business of the Meeting, the CHAIRMAN referred in sympathetic terms to the death of Mr William Neilson, Haining Valley, a Director of the Society for the Stirling Division. He submitted the terms of a resolution, which was unanimously approved, the members present upstanding, and the Secretary was instructed to send a copy thereof to the relatives of the deceased.

Potato Crop—1918.

A letter, dated 4th May, from the Director of Vegetable Supplies, Ministry of Food, was submitted, in reply to the representation made by the Directors on 3rd April, in which it was stated that a scheme had now been framed by the Committee appointed to deal with the 1918 Potato Crop, and that this scheme would be submitted for the approval of the Food Controller at an early date.

Cattle Prices.

A letter was submitted, dated 10th May, from the Secretary of the Ministry of Food, acknowledging receipt of the representation made by the Directors at last Meeting as to cattle prices and the present and future supply of store cattle.

The CHAIRMAN said the recommendations of the Society had had some effect, and closer watch was being kept on the prices and slaughter of Irish cattle, which the Society had represented as the cause of the shortage of store cattle in this country.

Conjoint Board of Scientific Societies.

A letter from the Secretary of the Conjoint Board of Scientific Societies was read, asking whether the Society desired copies of the Minutes of the Conjoint Board for circulation amongst the Directors. The CHAIRMAN pointed out that only a small part of these Minutes would be of interest to Directors, but any one wishing to receive them should hand his name to the Secretary.

Glasgow Veterinary College.

A letter from the Secretary of the Glasgow Veterinary College was submitted, in which it was pointed out that the term of office of representatives of electing bodies on the Board of Governors of the College now terminated as at 30th September in each year. It was unanimously agreed to reappoint Mr Alexander Cross of Knockdon as the Society's representative on the Board of Governors for one year from 30th September next.

Grain Drying Sheds.

A letter from the Board of Agriculture for Scotland, dated 4th June, was submitted, in which it was stated that the Board did not feel justified at present in approaching the Treasury for a grant for the purpose of giving loans on special terms of repayment for the erection of grain drying sheds.

Mr GEORGE W. CONSTABLE moved that the Secretary be instructed to write to the Board of Agriculture and ascertain if they would be willing to extend the period of repayment of loans from twenty-five years to thirty-five years, and this was unanimously agreed to.

Science.

A Minute of Meeting of Science Committee, dated 5th June, was submitted and approved.

The Minute recommended:—

Seed Testing and Registering Station.—That the three representatives of the Society on the Committee of Management of the proposed Seed Testing and Registering Station be as follows: Dr Charles Douglas, Dr David Wilson, and Mr James Elder.

Wild White Clover Seed.—That in connection with the offer of Wild White Clover Seed by Mr George Wood, Haselton, Gloucestershire, a letter be sent to the three Agricultural Colleges in Scotland acquainting them with the offer and the conditions, and asking if the Colleges would be prepared to institute from ten to fifteen small experiments each on the lines indicated; the intention being that County Advisers would select suitable ground, supervise the application of the seed, and report on the results.

Mechanical Drainage.

A Minute of Meeting of Implements Committee, dated 5th June, was submitted.

The Minute—embodying the terms of a report by a Sub-Committee—stated that after full consideration of the information collected from various sources regarding land drainage by machinery, a report received from the Chief Engineer of the U.S. Department of Agriculture, and a report prepared by the Society's Consulting Engineer, Professor Stanfield, the Committee considered that the machine most likely to suit conditions in Scotland was the No. 1 Buckeye, with caterpillar traction and capable of digging drains 11½ inches and 14½ inches wide by 4½ feet deep. The estimated cost of this machine, delivered at a port in the United Kingdom, and including sufficient spares for a reasonable period of working, was approximately £1500. To carry out initial demonstration work a skilled staff would be required, and to cover the charge and maintenance, &c., in carrying out a series of exhaustive trials in different localities in Scotland, a further sum of at least £1000 would be necessary.

The Minute further stated that these conclusions had been communicated to the Secretary for Scotland and the Board of Agriculture for Scotland, with the result that a letter, dated 10th June, had been received from the Board of Agriculture, in which it was stated that the Board were prepared to purchase the machine recommended at a cost, inclusive of freight and delivery to the order of the Society, not exceeding £1500; the Society to be responsible for the control and hiring of the machine for one year.

The Minute, in conclusion, recommended the appointment of a Sub-Committee to adjust with the Board of Agriculture the terms on which the machine was to be operated during its period of trial, it being understood that the Board of Agriculture should undertake to bear any loss which might occur in this connection; the supervision and the cost of preparation of a report on the trial to be undertaken by the Society. This Sub-Committee should also have full powers to order the machine, and to carry out any preliminary arrangements. The names of the members of the Sub-Committee were as follows: Mr G. B. Shields, *Convener;* Dr Charles Douglas, Mr J. T. M'Laren, Mr D. M. Wallace, Professor Stanfield, and the Secretary.

Mr G. B. Shields, *Convener*, in moving the adoption of the Minute, said the Directors would desire to thank the Board of Agriculture for the practical manner in which they had received and acted upon the suggestions of the Committee.

The Minute was unanimously approved.

Argyll Naval Fund.

A Minute of Meeting of Argyll Naval Fund Committee, dated 5th June, was read and approved.

The Minute recommended that, as the annual income was now over £296, with an annual expenditure of £240, in six grants of £40 each, a seventh name should be added to the list of beneficiaries. It was further recommended that this vacancy, and any other vacancies occurring in ordinary course, be advertised in the usual newspapers, and that the Committee be given power to make appointments to the vacancies, so that selected candidates may receive the benefits of the grant as from 1st July.

Settlement of Sailors and Soldiers on the Land.

Dr DAVID WILSON reported that, on 23rd May, representatives of the Society had attended a Conference with the Secretary for Scotland on the Settlement of Sailors and Soldiers on the Land. The Society was represented by Mr Peter M'Intyre, Mr G. G. Mercer, Mr G. B. Shields, the Secretary, and himself, and there were also present representatives of the Scottish Chamber of Agriculture, and of the National Farmers' Union of Scotland.

The Secretary for Scotland was not in a position to lay any definite proposals before the Conference, and the representatives present could only give expression to their individual opinions. He had suggested that, if the Secretary for Scotland wished a Memorial to be sent to him on the subject, they would be glad to prepare it. As this proposal was readily accepted, he accordingly moved that the Board remit to the Law and Parliamentary Committee, with powers, to prepare such a Memorial, and forward it to the Secretary for Scotland.

Mr PETER M'INTYRE seconded, and added the suggestion that the members of the deputation be co-opted on the Law and Parliamentary Committee for this special purpose.

The remit was agreed to.

Wool Clip—1918.

Mr PETER M'INTYRE reported on the action taken by the Joint Committee on the price of the Wool Clip for 1918.

On 23rd January 1918, a Meeting of the Joint Committee of representatives of the Highland and Agricultural Society of Scotland, the Scottish Chamber of Agriculture, and the National Farmers' Union of Scotland was held, when recommendations regarding the price to be paid for the Wool Clip of 1918 were unanimously adopted. Stated shortly, these were that an increase of 87½ per cent over the average market price of 1914 should be given in the case of White-face Wool, and 79 per cent in the case of Black-face.

These recommendations were forwarded, on 24th January, to Mr H. W. Forster, M.P., Financial Secretary to the War Office, together with an Explanatory Statement containing the ground on which the recommendations were based. At the same time it was pointed out that, if the War Office saw its way to accept the recommendations, it would be unnecessary to ask that a deputation be received on the subject; but that, if the War Office could not see its way to accept the recommendations in substance, it was respectfully requested that, before a price was fixed, a deputation of three flockmasters be received—one from each of the bodies above named—in order to hear the views of Scottish sheep-farmers on the subject.

To that letter Mr Forster replied, on 25th January, that the matter was receiving his careful consideration. On 26th March and 4th April further letters were addressed to Mr Forster pressing the claims of Scottish flockmasters to be heard before fixing a price for wool. To the latter Mr Forster replied, on 8th April, that, as the price of the 1918 Wool Clip had now been fixed by the Surveyor-General of Supply, the letter had been passed on to the Director of Raw Materials. No further communication had been received, and detailed prices had been published by the War Office showing an increase of only 60 per cent over the 1914 price.

The representatives of the three bodies mentioned met again on 15th May, when extreme disappointment and surprise were expressed at the low price fixed, and the fact that the War Office had completely ignored the request of Scottish flockmasters to be heard before fixing the price of the 1918 Wool Clip.

A strong representation on the subject had been forwarded to Lord Milner, Secretary of State for War, and copies of this representation had been sent to various members of Parliament.

Mr M'INTYRE said he did not know what would be the outcome of these representations, but the Joint Committee wished, by their action, to keep the door open for any steps which it might be thought advisable to take in the future.

Sheepskin Prices.

Mr M'INTYRE also reported the result of inquiries which he had made with regard to the complaint contained in a letter from the Wester Ross Farmers' Club as to the prices being paid for sheepskins. The results of these inquiries were generally to the effect that the prices now being paid for skins were considerably higher than those paid in 1913 and 1914.

Research in Plant-breeding.

The CHAIRMAN said there had been a good deal of informal discussion as to the necessity for research in plant-breeding in Scotland, and any doubt that had existed was not so much as to the desirability of carrying out the proposals as with reference to the best method of launching such a proposal. A letter had recently appeared in the press on the subject by Mr James Elder. No one was better qualified to initiate such a discussion than Mr Elder. They all recognised that a better opening of the question could not have been made, and such an opening having been made, the necessity for definite action arose.

After referring to the importance of research in plant-breeding and the introduction of new varieties of seeds, he moved that the matter be remitted for consideration to the Science Committee, and, in order that the Committee might deal with the subject promptly, he moved that the Board be called together to consider the Committee's report as soon as possible.

Mr JAMES ELDER seconded, and the Motion was unanimously agreed to.

Forestry.

A letter was submitted from the Royal English Arboricultural Society, dated 16th May, with copy Resolution to the effect that, pending the appointment of a permanent Forestry Authority, the Forestry Sub-Committee of the Reconstruction Committee should be empowered to carry out the recommendations embodied in their final report.

The CHAIRMAN said the Board would remember that they had adopted, after careful consideration, a report of the Forestry Committee containing Resolutions dealing with this subject. It would not be quite consistent with that report to take any further action on the lines suggested by the Royal Arboricultural Society, and he suggested that they should simply adhere to the Resolutions they had adopted in the meantime.

This was agreed to.

Grading of Store Lambs.

Mr PETER M'INTYRE said it was currently reported that the Food Controller had in preparation a scheme for the grading of all store lambs put on the market from the beginning of July next. If the scheme was what it was said to be, it would be a serious matter for sheep-breeders, and he accordingly moved that the matter be remitted for consideration to the Law and Parliamentary Committee.

The CHAIRMAN said that this matter had not come before the Agricultural Advisory Committee to the Ministry of Food, but that he had given notice, in general terms, of a Motion for the next meeting. It would be of advantage to the Society's representatives on that Committee if they could have the subject fully discussed by the Law and Parliamentary Committee.

The Motion was agreed to.

Finance.

A Minute of Meeting of Committee, dated 5th June, was submitted and approved.

The Minute dealt with the following subjects:—

Consulting Chemist's Fees.—In view of the greatly increased cost of material, apparatus, and salaries in the Consulting Chemist's Department, it was agreed, in accordance with a recommendation by the Science Committee, to recommend that Dr Tocher's retaining fee of £50 be increased to £100, and that the fees for analyses be increased by 50 per cent, the additional 50 per cent, or two-thirds of the entire cost of analyses, being borne by the Society, and the charges to members remaining as at present. These changes to take effect as from 1st December 1917.

Demonstration of Tractors and Ploughs.—It was reported that the Board of Agriculture for Scotland had increased the amount of their grant in aid towards the expenses of the Demonstration from £350 to £500, being practically half of the total amount expended—£1084, 19s. 9d. A cheque for the Board's contribution had been received.

SPECIAL MEETING OF DIRECTORS, 25TH JUNE 1918.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present.—Ordinary Directors—Mr William Carrick; Mr Alexander Cowan; Mr Charles Douglas, D.Sc., C.B.; Mr James Elder; Mr John Elliot; Mr Murray Little; Mr John M'Caig; Mr James M'Queen; Mr G. Bertram Shields; Mr Moffat S. Thomson. *Extraordinary Directors*—Mr Harry Armour; Mr George G. Mercer, J.P.; Mr Phipps O. Turnbull. *Treasurer*—Dr David Wilson.

Research in Plant-breeding.

The CHAIRMAN said he had called that Special Meeting in order to consider the recommendations of the Science Committee on the subject of a Station for Research in Plant-breeding in Scotland. He thought the Directors would all agree with him that this was a matter which it was desirable should be dealt with at the earliest possible moment.

After discussing the future procedure to be followed, in the event of the Science Committee's recommendations being adopted, he called upon Dr Wilson to submit the minute.

Dr DAVID WILSON, *Convener*, submitted the Minute of Meeting of Science Committee, held at Edinburgh on 14th June 1918, which was in the following terms:—

Present.—Dr David Wilson of Carbeth, *Convener*, in the chair; Mr Alexander Cowan, Valleyfield; Mr Alexander Cross of Knockdon; Mr Charles Douglas, D.Sc., C.B., of Auchlochan; Mr James Elder, Athelstaneford Mains; Mr J. T. M'Laren, The Leuchold; Mr James M'Queen of Crofts; Mr George G. Mercer, J.P., Southfield; Mr G. Bertram Shields, Dolphingstone; Mr Phipps O. Turnbull, Smeaton; Dr R. Stewart MacDougall, Consulting Zoologist.

Apologies for absence were intimated from Sir Hugh Shaw-Stewart, Bart., C.B., of Greenock; Mr George W. Constable, Traquair Estates Office; Mr Murray Little, Summerhill; and Mr R. D. Thom of Pitlochie.

The Committee unanimously agreed to recommend that the Directors approve of the proposal for the institution of a Research Station in Plant-breeding in Scotland.

It was also unanimously agreed to recommend that the Directors propose that the Society make a grant of £2000 towards this object, on the following conditions:—

(1) That a grant be obtained from public funds, by the Board of Agriculture for Scotland, of at least a like amount to that raised from all other sources.

(2) That the representative Agricultural bodies in Scotland be adequately represented on the governing body of the proposed Station.

The Committee further agreed to recommend that the Highland and Agricultural Society invite the following representatives to meet them at a Conference to promote the objects in view, to appoint a preliminary Committee which should have charge of details and confer with the Board of Agriculture, and to co-operate in raising the necessary funds:—

(*a*) The Directors of the Scottish Chamber of Agriculture.
(*b*) The Central Executive of the National Farmers' Union of Scotland.
(*c*) The Executive Committee of the Scottish Seed Trade Association.

It was decided to recommend that representatives of the Board of Agriculture for Scotland be invited to attend the proposed Conference.

Dr WILSON moved approval of the Minute. This was seconded by Mr JAMES ELDER, and, after discussion, unanimously agreed to.

On the motion of the CHAIRMAN, it was decided to communicate the recommendations contained in the Minute to the Press.

The following Sub-Committee was appointed to make arrangements for the proposed Conference and to draw up the resolutions to be submitted thereat: Dr David Wilson, Dr Charles Douglas, Mr Alexander Cross, Mr James Elder, Mr G. B. Shields and the Secretary.

SPECIAL MEETING OF DIRECTORS, 26TH JULY 1918.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present.—*Vice-President*—Sir Archibald Buchan Hepburn, Bart. *Ordinary Directors*—Mr George W. Constable; Mr Alexander Cowan; Mr Charles Douglas, D.Sc., C.B.; Mr James Elder; Mr William Elliot; Mr Murray Little; Mr James M'Queen; Mr John C. Robertson; Mr G. Bertram Shields; Mr John P. Sleigh; Mr D. A. Stewart; Mr R. D. Thom; Mr Moffat S. Thomson. *Extraordinary Directors*—Mr Harry Armour; Mr John G. Dudgeon; Mr Hugh M. Leadbetter; Mr A. B. Leitch; Mr Phipps O. Turnbull. *Hon. Secretary*—Mr Alexander Cross. *Treasurer*—Dr David Wilson.

Station for Research in Plant-breeding.

Confirmation of Minutes.

The Minute of Special Meeting of Directors, dated 25th June, with regard to the institution of a Station for Research in Plant-breeding in Scotland, and the proposal that a grant of £2000 be made by the Society towards this object, was read and confirmed.

Arrangements for Conference.

The SECRETARY intimated the arrangements for the Conference to be held that afternoon, and read two Resolutions, drawn up by the Arrangements Sub-Committee, which it was intended to move at the Conference.

The CHAIRMAN said the Directors would observe that it was proposed that there should be a large Committee at that stage. That did not mean that the Committee now proposed was to be in any way a Committee of Management; it was a General Committee to evoke public interest and secure financial support, and therefore it had been thought wise to recommend that it should be a large Committee, so as to reach the Agricultural community generally.

The arrangements for the Conference were approved.

General Meeting.

Arrangements for the General Meeting of Members, to precede the Conference, were submitted and approved.

Publications.

A Minute of Meeting of Publications Committee, dated 26th July, was read and approved.

The Minute recommended payments to writers of articles in the 'Transactions,' amounting to £116, 7s.

SPECIAL MEETING OF DIRECTORS, 11TH SEPTEMBER 1918.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present.—*Ordinary Directors*—Mr George W. Constable; Mr Charles Douglas, D.Sc., C.B.; Mr James Elder; Mr John Elliot; Colonel Alex. T. Gordon; Mr William Mungall; Mr G. Bertram Shields. *Extraordinary Directors*—Mr Harry Armour; Mr J. T. M'Laren; Mr George G. Mercer, J.P.; Mr Phipps O. Turnbull. *Hon. Secretary*—Mr Alexander Cross. *Treasurer*—Dr David Wilson. *Chemist*—Dr J. F. Tocher.

Station for Research in Plant-breeding.

Representatives on Committee.

The CHAIRMAN explained that the business before the Meeting was the appointment of ten representatives of the Society on the Committee being formed in connection with the proposed Station for Research in Plant-breeding in Scotland. The matter had been considered at a meeting of the Science Committee that day, with the view of advising the Board as to the most suitable representation.

The SECRETARY read the list of representatives suggested by the Science Committee as follows: Mr Charles Douglas, Dr David Wilson, Mr Alexander Cross, Mr James Elder, Sir A. Buchan Hepburn, Bart., Lord Forteviot, Mr J. T. M'Laren, Mr John C. Robertson, Mr John M'Caig, and Mr G. B. Shields.

Dr DAVID WILSON, *Convener*, said that the Science Committee had drawn up the best list they could. There were other names they should have been glad to include had there been room for them. The list was submitted merely as being suggestive and something to work upon.

On the motion of Mr GEORGE W. CONSTABLE, the list of representatives was unanimously adopted.

Secretaryship of Committee.

The CHAIRMAN said it was possible that the Committee might, at its Meeting that afternoon, wish to avail itself of the services of Mr Stirton as Secretary. It would, therefore, be desirable if he knew in advance whether the Directors approved of his undertaking the duties.

The Directors unanimously approved of Mr Stirton being permitted to undertake the duties of Secretary of the Committee.

MEETING OF DIRECTORS, 6TH NOVEMBER 1918.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present. — *Vice-President* — Sir Archibald Buchan Hepburn, Bart. *Ordinary Directors*—Mr Alexander Cowan; Mr Charles Douglas, D.Sc., C.B.; Mr James Elder; Mr John Elliot; Mr David Ferrie; Sir Kenneth Mackenzie, Bart.; Mr Hugh Martin; Mr Robert Park; Mr John P. Sleigh; Mr Moffat S. Thomson; Mr Phipps O. Turnbull. *Extraordinary Directors*—Mr James Allison; Mr Archibald Cochrane; Mr George W. Constable; Sir Henry Dundas, Bart., M.V.O.; Mr Thomas Elder; Mr William Elliot; Mr Thomas Kirk; Mr A. B. Leitch; Mr Peter M'Intyre; Mr J. T. M'Laren; Mr James M'Queen; Mr G. Bertram Shields; Mr R. D. Thom. *Hon. Secretary*—Mr Alexander Cross. *Consulting Engineer*—Professor R. Stanfield.

The late Sir Robert K. Inches.

Before proceeding with the business of the Meeting, the CHAIRMAN referred in sympathetic terms to the loss which the Society had sustained through the death of Sir Robert K. Inches, who had rendered valuable services to the Society as a Vice-President and as an Extraordinary Director.

The late R. H. N. Sellar, Huntly.

The CHAIRMAN also made sympathetic reference to the loss which the Society had sustained through the death of Mr R. H. N. Sellar, Huntly, and the valuable services which he had rendered as an Extraordinary Director.

Appropriate resolutions of regret and sympathy were submitted and approved, the members present upstanding, and the Secretary was instructed to forward copies to the relatives of the deceased gentlemen.

Chairman of the Board for 1918-19.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., moved that Mr Charles Douglas, D.Sc., C.B., of Auchlochan, be re-elected Chairman of the Board for another year. In doing so he mentioned that this was the fifth occasion on which he had had the honour of proposing the re-election of the present Chairman, and referred to the great tact and practical ability which Dr Douglas had brought to bear on the many difficult questions which the Directors had had to deal with since the commencement of the war.

Mr ALEXANDER CROSS of Knockdon seconded, and the Motion was unanimously agreed to.

Dr DOUGLAS, in thanking the Directors for the honour they had done him, said that the circumstances which had led to the unprecedented length of his period of office were now fortunately passing away. The question of holding a Show in 1919

would be considered by the Shows Committee in December, but he expressed the view that it was their plain and obvious duty, if at all possible, to hold a Show next year.

Standing Committees.

It was intimated that the Standing Committees for the ensuing year had been appointed by the Board in Committee, and the names would be printed as usual in the Premium Book.

Representatives on other Bodies.

The following were appointed representatives of the Society on the Boards of the undernoted institutions for the ensuing year—viz.: *Scottish Council of Agriculture*—Mr Charles Douglas, D.Sc., C.B., of Auchlochan, Lesmahagow; Mr David Wilson, D.Sc., of Carbeth, Killearn; Mr G. Bertram Shields, Dolphingstone, Tranent; Mr John Stirton, Secretary, Highland and Agricultural Society. *Board of Scientific Societies*—Mr Charles Douglas, D.Sc., C.B., of Auchlochan, Lesmahagow. *Edinburgh and East of Scotland College of Agriculture*—Sir Archibald Buchan Hepburn of Smeaton, Bart., Haddington; Mr Phipps O. Turnbull, Smeaton, Dalkeith. *West of Scotland Agricultural College*—Sir Hugh Shaw Stewart, C.B., of Ardgowan and Blackhall, Bart., Ardgowan, Greenock; Mr John M'Caig of Belmont, Stranraer. *Aberdeen and North of Scotland College of Agriculture*—Mr William Duthie, Tarves; Dr J. F. Tocher, 41½ Union Street, Aberdeen. *Royal (Dick) Veterinary College*—Sir Archibald Buchan Hepburn of Smeaton, Bart., Letham, Haddington. *Glasgow Veterinary College*—Mr Alexander Cross of Knockdon, 19 Hope Street, Glasgow. *Scottish Milk Records Association*—Mr Alexander Cross of Knockdon, 19 Hope Street, Glasgow; Mr John M'Caig of Belmont, Stranraer; Sir Hugh Shaw-Stewart, Bart., C.B., of Greenock and Blackhall.

Scottish Station for Research in Plant-breeding.

A Minute of Proceedings at a Conference, held on 26th July, with regard to the institution of a Station for Research in Plant-breeding in Scotland, was submitted. (See page 364.)

Training of Tractor Workers.

A letter, dated 6th June, from the Board of Agriculture for Scotland, was read in reply to the representation made by the Directors at the Meeting on 1st May. The Board stated that arrangements had been made, whereby a number of their tractor workers were employed in engineers' shops in order to assist in overhauling and examining tractors, and that these men will be placed in such a way in autumn as to allow of the best possible use being made of their services for training and assisting other tractor drivers who may be less familiar with the mechanism of the machines.

Mechanical Drainage.

A letter, dated 19th June, from the Board of Agriculture for Scotland, was submitted, in which it was stated that the Board were prepared to meet any loss that might accrue on the first year's working of the Ditching Machine.

A letter, dated 5th July, from Messrs John Wallace & Sons, Ltd., Glasgow, was submitted, stating that the No. 1 Buckeye Ditcher had been duly ordered, and that, in view of the machine being practically experimental, they had decided to supply the outfit at net cost price to the Society. The thanks of the Directors were expressed to Messrs John Wallace & Sons.

National Diploma in Dairying.

Mr Alexander Cross, Convener of the Education Committee, submitted Reports on the Examinations for the National Diploma in Dairying, held at Reading and Kilmarnock in the end of September, showing that 29 candidates presented themselves at Reading, of whom 19 passed, and 22 at Kilmarnock, of whom 14 passed.

Grain Drying Sheds.

A letter from the Board of Agriculture for Scotland, dated 19th July, was submitted, in which it was stated that, as they were advised that the average life of a wooden under-structure with corrugated iron above was not more than twenty-five years, they were not disposed to recommend the extension of the period for repayment of loans of money granted for the erection of grain drying sheds beyond twenty-five years.

Mr GEORGE W. CONSTABLE pointed out that while such a shed might last only twenty-five years, a shed with iron pillars and corrugated iron roof would last from thirty to thirty-five years. He suggested that this fact should be pointed out to the Board of Agriculture, and this was agreed to.

Potato Crop—1918.

The SECRETARY reported that a letter had been received from the Board of Agriculture for Scotland, dated 23rd September, inviting the Society to nominate three representatives to attend a Conference with regard to the price to be fixed for the Potato crop of 1918.

As there was no Meeting of Directors at which nominations could be made, the Chairman had nominated Mr G. Bertram Shields, Mr Hugh Martin, and Mr A. B. Leitch to represent the Society. These nominations were duly approved.

Wool Clip—1918.

The SECRETARY reported that, in reply to the representation sent by the Joint Committee to Lord Milner, Secretary of State for War, on 1st June, a letter had been received, dated 10th June, in which it was stated "that before the prices were actually fixed very careful inquiry was made into all the circumstances of the case, and the opinion of the Boards of Agriculture of England, Scotland, and Ireland was duly obtained. These Boards, together with the War Office, came to the joint conclusion that no justification could be offered to the Treasury for paying more than 60 per cent over the average market price of 1914."

On 20th June a letter was addressed to the Board of Agriculture for Scotland, inquiring if it was the case, as stated, that the Board was consulted as to the price to be paid for the Wool Clip of 1918, and if the Board was in agreement with the joint conclusion said to have been arrived at by the War Office and the three Boards of Agriculture.

In reply to this inquiry, a letter was received from the Board of Agriculture for Scotland, dated 3rd August, enclosing copy of a letter from the War Office to the Board of Agriculture for Scotland, dated 27th July. In that letter the following passage occurred:—

"I am to express regret that the wording of the letter of the 10th June last from this Department conveyed the erroneous impression that your Department had recommended the percentage increase for the 1917 price which was finally adopted by the War Office.

"I am to state that it was intended to convey to the Highland and Agricultural Society of Scotland that after the matter had been thoroughly inquired into, not only by the War Office but by the Boards of Agriculture for England, Scotland, and Ireland, it had been decided that under all the circumstances an advance of 60 per cent above the average June/July 1914 prices for Wool would provide a remunerative price to the grower.

"I am to add that the basis price of 60 per cent over the average prices ruling in June and July 1914 was the basis recommended by the Boards of Agriculture for England and Ireland, which coincided with the opinion previously formed by the War Office after examination of all the evidence submitted by the various interested bodies."

Overseas Soldiers.

The SECRETARY submitted a Report on a series of visits by officers and men of the Overseas Forces to farms in Scotland.

The CHAIRMAN expressed the gratitude of the Directors to the Committee for the arrangements they had made, to those farmers who had supported the scheme by giving facilities for visiting their farms and stocks and assisting in the conveyance of the men, and to Lieutenant Kirk of Abbey Mains, who had organised the visits and transport in the East Lothian district.

On the suggestion of the Chairman, it was further agreed that these visits be continued so long as may be found desirable, the arrangements being left in the hands of the same Committee.

Grading of Lambs.

Mr JOHN ELLIOT of Meigle said there had been many complaints as to the grading of lambs in the south-western area of Scotland, and pointed out that grading had been resorted to there to an extent not obtaining in any other area of the country. Flockmasters in the district felt that they had a grievance in being singled out for this treatment.

On the suggestion of the CHAIRMAN, the Secretary was instructed to inquire from the Live Stock Commissioner for Scotland what number of lambs were graded below the normal price of 1s. 2d. per lb. in each of the different areas of Scotland, and whether the grading was carried out in the different areas on identical principles.

Annual Show.

Mr J. T. M'LAREN, Convener of the Shows Committee, said that in view of the brighter war outlook, a meeting of Shows Committee would be held in December to consider as to the holding of a Show in 1919. One of the most difficult problems would be the securing of a suitable site in the Edinburgh area. The ground previously selected had been ploughed up, and most of the available ground in the vicinity of Edinburgh was under the plough.

He moved that a small Committee be appointed to consider the question of finding a suitable site in the Edinburgh district, and this was agreed to. The Committee appointed was as follows: Mr J. T. M'Laren, *Convener;* Mr Thomas Elder, Mr Thomas Kirk, Mr G. B. Shields, Mr P. O. Turnbull, Professor Stanfield, and the Secretary.

MEETING OF DIRECTORS, 4TH DECEMBER 1918.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present.—Ordinary Directors—Mr William Carrick; Mr Alexander Cowan; Mr Charles Douglas, D.Sc., C.B.; Mr John Elliot; Mr David Ferrie; Mr Alexander Forbes; Mr J. Ernest Kerr; Sir Kenneth Mackenzie, Bart.; Mr Hugh Martin; Mr William Mungall; Mr Robert Park; Mr John P. Sleigh; Mr Moffat S. Thomson; Mr Phipps O. Turnbull. *Extraordinary Directors*—Mr James Allison; Mr Archibald Cochrane; Mr George W. Constable; Mr James J. Davidson; Mr Thomas Elder; Mr William Elliot; Mr A. J. Irvine; Mr Thomas Kirk; Mr Peter M'Intyre; Sir Hugh Shaw-Stewart, Bart., C.B. *Hon. Secretary*—Mr Alexander Cross. *Consulting Engineer*—Professor R. Stanfield. *Chemist*—Dr J. F. Tocher.

Wool Clip—1919.

On a question by Mr PETER M'INTYRE as to whether the Society's representatives on the Joint Committee on Wool were empowered to go before the War Contracts Department of the War Office, by deputation or otherwise, the CHAIRMAN pointed out that such powers were originally conferred on these representatives and would be continued so long as the Committee continued to act.

Grading of Lambs.

The SECRETARY read a letter from the Live Stock Commissioner for Scotland with reference to the grading of lambs in the south-western area of Scotland and elsewhere, stating that inquiry would be made and the results communicated later.

Australian Soldiers and Farm Training.

A letter was read, dated 13th November, from Mr Wm. Hughes, Prime Minister of Australia, asking the co-operation of the Directors in affording to Australian soldiers an opportunity of a short period of training on the great farms of the country before they return to Australia.

The CHAIRMAN said this was a matter which would appeal to the Board and to the wider public of Scottish farmers, to whom he hoped this letter would be made known through the press. He suggested that the Secretary should reply that the Directors were prepared to do their utmost to give effect to Mr Hughes' wishes, and stating that they desired to be more fully informed as to the period of training contemplated, and the number of men who wished it. He would also add the suggestion that if Mr Hughes desired to see him on the subject he would make an opportunity of meeting him in London.

This suggestion was agreed to.

Research into Animal Diseases.

A letter, dated 28th November, from the National Farmers' Union of Scotland, was read, intimating that the Central Executive Committee of the Union had decided to press the Government to take immediate steps to inaugurate a National Scheme for Research into Diseases of Animals.

The CHAIRMAN said he was sure the members of the Board were absolutely at one in recognising the great importance and urgency of this matter as affecting the diseases of Animals, and particularly the diseases of Sheep. They were all entirely in sympathy with the project, and welcomed the joint action proposed by the Farmers' Union. As to the means by which the object could be attained—whether by a separate institution or by augmented resources—it must be considered by a Committee. He moved that it be remitted to the Science Committee to consider the matter, and to arrange for a conference with other bodies if that were thought desirable.

Mr P. O. TURNBULL seconded the Motion. He said he was glad the Society was prepared to give a lead in this matter. The country would have to recognise the large number of animals lost annually by disease. It was stated that the loss in one county alone amounted to £70,000 per annum. There was a very heavy mortality amongst hoggs in many districts. The Highland Society, the Farmers' Union, and the Chamber of Agriculture ought to ask that representatives of the Board of Agriculture meet them on the subject, and they must put as strong a case as possible before the Board.

The Motion was unanimously agreed to.

Vacancies on Board.

On the motion of Mr WILLIAM CARRICK, seconded by Mr ERNEST KERR, Mr William A. Dron, Crieffvechter, was nominated as an Ordinary Director for the Stirling Division in room of the late Mr William Neilson, Haining Valley.

A Minute of Meeting of Office-bearers Committee, dated 4th December, was submitted and approved.

The Minute recommended the nomination of the following gentlemen to fill vacancies in the list of Extraordinary Directors—(1) to fill the vacancy caused through the death of Sir Robert K. Inches—Mr George Pendreigh, Upper Dalhousie, Bonnyrigg; (2) To fill the vacancy caused through the death of Mr R. H. N. Sellar—Mr John Elder, Tweedside Implement Works, Berwick-on-Tweed.

Science.

A Minute of Meeting of Committee, dated 4th December, was submitted and approved.

The Minute dealt with the following subjects :—

Mineral Phosphates Investigation.—Dr TOCHER submitted a statement regarding the progress made with the field and laboratory experiments being conducted on Mineral Phosphates. He hoped to submit a full report of the results of these experiments in the course of six weeks.

Grass Sickness in Horses.—Dr Tocher also reported as to the progress of the investigation into Grass Sickness in Horses in Forfarshire and adjoining areas. He was asked to submit to the Directors, at an early date, proposals for the further prosecution of this investigation, together with an estimate of the probable cost.

Sheep Diseases Investigation.—A letter from the Glasgow Veterinary College, dated 29th June, together with copies of an appeal for support to proprietors, flockmasters, and all interested in sheep diseases, had been considered. The Committee recommended that the Board of Directors approve and commend this appeal to flockmasters and all interested in the investigation of sheep diseases.

Annual Show.

A Minute of Meeting of Shows Committee, dated 3rd December, was submitted and approved.

The Minute stated that the investigations of the Sub-Committee appointed at last Meeting to inquire as to the possibility of securing a suitable site for the Show in the vicinity of Edinburgh had not yet been completed. It was therefore recommended that the matter be continued in the hands of the Sub-Committee. It was further recommended that the name of Mr James Allison be added to the Sub-Committee.

The CHAIRMAN, in moving adoption of the Minute, said he thought it right to point out and to emphasise that the proceedings of the Committee so far indicated a very serious difficulty in finding a suitable, or even a possible, site for the Show of 1919 in Edinburgh. So far as he could see at present, that difficulty could be overcome only

in one way, and that was if they could prevail upon the Town Council to allow the use of the Meadows, under proper conditions, for the Show. Failing that, it might be necessary for the Board to consider whether they would not ask the Members, at a General Meeting, to rescind their resolution and hold the Show in some other district. He hoped, however, that that would not be necessary.

Scottish Milk Advisory Committee.

A letter was submitted from the Divisional Food Commissioner, Edinburgh, stating that it had been decided to establish a Scottish Milk Advisory Committee to advise the Scottish Milk Board on questions, other than financial questions, arising out of the Food Controller's decision to assume control over the wholesale milk trade, and inviting the Society to nominate a representative. On the motion of the CHAIRMAN, Mr John M'Caig of Belmont, Stranraer, was unanimously nominated as the Society's representative on the Committee.

Grants to Local Societies.

A Report by the Shows Committee, dated 4th December, relating to Grants to Local Societies, was submitted and approved.

The Committee recommended eighteen districts for grants of £12 each; fourteen districts for three Silver Medals each; thirteen districts for grants of £15 each for Stallions; special grants of £40 for Highland Home Industries; £20 to Kilmarnock Cheese Show; £25 to Scottish Horticultural Association for Exhibition of Potatoes; £15 to Scottish Women's Rural Institutes (Lothian Federation); two Medals to Ross-shire Crofters' Club; £5 to Shetland Agricultural Society; £3 each to Orkney, Sanday, North Uist, East Mainland, and West Mainland; a Gold Medal and a Silver Medal to the British Dairymaids' Association; seventeen districts for two Medals each; the usual Medals at Ploughing and Hoeing Competitions; and six districts for two Medals each for Cottages and Gardens; Long Service Medals and Certificates, say £30—making the total sum offered in 1919 £700, against £211, 1s. awarded in 1918.

MEETING OF DIRECTORS, 8TH JANUARY 1919.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present. — *Vice-President* — Sir Archibald Buchan Hepburn, Bart. *Ordinary Directors*—Mr William Carrick; Mr Alexander Cowan; Mr Charles Douglas, D.Sc., C.B.; Mr John Elliot; Mr David Ferrie; Mr Alexander Forbes; Colonel A. T. Gordon, M.P.; Mr J. Ernest Kerr; Mr Murray Little; Mr John M'Caig; Captain R. Macmillan; Mr Hugh Martin; Mr Robert Park; Colonel J. L. Reid; Mr John C. Robertson; Mr John P. Sleigh; Mr S. Strang Steel, M.P.; Mr Moffat S. Thomson; Mr Phipps O. Turnbull. *Extraordinary Directors*—Mr James Allison; Mr Archibald Cochrane; Mr George W. Constable; Mr James I. Davidson; Sir Henry Dundas, Bart.; Mr Thomas Elder; Mr William Elliot; Mr A. F. Irvine; Mr Thomas Kirk; Mr A. B. Leitch; Mr Peter M'Intyre; Mr J. T. M'Laren; Mr James M'Queen; Mr G. Bertram Shields; Sir Hugh Shaw-Stewart, Bart., C.B. *Hon. Treasurer*—Dr David Wilson. *Hon. Secretary*—Mr Alexander Cross. *Consulting Engineer*—Professor R. Stanfield. *Chemist*—Dr J. F. Tocher. *Auditor*—Mr William Home Cook, C.A.

Agricultural Executive Committees and Agricultural Advisory Council.

A letter was submitted, dated 4th January, from the Secretary of the National Farmers' Union of Scotland, inviting the Society to join with them in a request to the Secretary for Scotland that the details of the scheme for the new Agricultural Executive Committee and Agricultural Advisory Council be submitted to the four organisations in draft for their suggestions before the scheme is finally fixed. On the motion of Mr MURRAY LITTLE, Annan, it was agreed to ask for details of the scheme before it is finally adopted.

Science.

INVESTIGATION INTO ANIMAL DISEASES.

A Minute of Meeting of Science Committee, dated 8th January, was read and approved.

The Minute recommended that the Society call an informal Conference of seven representatives of each of the three agricultural organisations—the Highland and Agricultural Society, the Scottish Chamber of Agriculture, and the National Farmers' Union of Scotland—to discuss and, if so agreed, to promote a scheme for investigation into the diseases of animals. The representatives of the Society were nominated as follows: Dr Charles Douglas, Mr John Elliot, Mr David Ferrie, Mr Thomas Kirk, Mr G. B. Shields, Sir Hugh Shaw-Stewart, Bart., and Dr David Wilson.

Edinburgh Show, 1919.

Show Site.—A Minute of Meeting of Shows Committee, dated 24th December, was submitted.

The Minute, after dealing with the investigations of the Sites Sub-Committee, recommended the Board to accept the offer by the Town Council of Edinburgh of the Meadows as a site for the Show, on the conditions laid down by them.

Mr J. T. M'Laren, Convener, in moving approval of the Minute, said that in many ways the Meadows provided an admirable site. The space available, about forty-six acres, might not be considered too large for an Edinburgh Show, but its central position and proximity to the railway stations and tramway lines provided facilities which could hardly be equalled.

The Minute was approved.

Showyard Erections.—A Minute of Meeting of Shows Committee, dated 7th January, was submitted.

The Minute contained a statement of the results of an interview between a Sub-Committee and the Showyard Contractor, which showed that the probable cost of the Showyard works would be approximately three times the amount for the last Edinburgh Show in 1907. The Committee recommended that the Contractor be requested to prepare a schedule of rates for the various items of Showyard construction, to be submitted at next meeting, but that meantime he be requested to proceed with securing the necessary material, on the assumption that the figures submitted would be accepted.

Mr M'Laren, in moving approval of this part of the Minute, said they were up against a big increase in expenditure, an increase amounting to over £7000. The price of timber had risen 383 per cent, and another heavy item was the increase in wages.

The Minute was approved.

New Gate Structure.—The Minute stated that the cost of the new gate structure would be £1497, and recommended that its construction be proceeded with. This was agreed to.

Prize List.—The Minute further stated that the Committee had revised the prize list, which had been prepared with a view to the Show being held in 1915. The following were the principal alterations recommended:—

Entry Fees.—That in view of the increased expenditure the entry fees for cattle, horses, sheep, pigs, and implements be doubled on the present occasion; that the entry fees for poultry be increased to 3s. for members, and 5s. for non-members; dairy produce, 6s. and 9s., and wool, 6s. This was agreed to.

Clydesdales.—That in Class 44, two-year-old colts, the prize money be £20, £15, £10, £4, instead of £20, £12, £8, £4. This was agreed to.

Hunters.—That in Classes 61 and 62 the restriction to hunters of 4 years of age be removed. This was agreed to.

Hunters and Highland Ponies.—That the note that judges shall have power to transfer to the proper class any animal entered in the wrong class, be deleted. This was agreed to.

Highland Ponies.—That the classification for heavy and light type be deleted, leaving only one class in place of Classes 74 and 75, and one class in place of Classes 77 and 78.

The Chairman recalled the history of the agitation which had led to the establishment of the dual classification, and referred to the increase of entries which had resulted. It was not their business as a Board, he said, to take any part in the question which led to a division in the ranks of breeders of these useful ponies. Their business was to get a good entry, and the dual classification had secured that. Personally he would regret a reversal of the policy which the Society had pursued during these later years.

Mr DAVID FERRIE of Parbroath moved that the dual classification be adhered to.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., seconded.

Mr JOHN C. ROBERTSON, Fodderty, moved the adoption of the recommendation contained in the Minute.

On a vote being taken, 12 voted for the retention of the dual classification, and 15 for the recommendation contained in the Minute—*i.e.*, that there be only one type, which therefore became the finding of the Meeting.

Blackface Sheep.—That a rule be inserted, applicable to all blackface sheep, that a declaration be submitted by the exhibitor that the sheep have been clipped on or after the 1st of April, no part of the animal being clipped prior to that date.

Captain R. MACMILLAN moved, as an Amendment, that the recommendation of the Committee be not adopted.

Mr PETER M'INTYRE seconded.

Mr ALEXANDER COWAN supported the approval of the Minute.

On a vote being taken, 13 voted for Captain Macmillan's Amendment, as against 9 for the Committee's recommendation. The proposed new rule was therefore deleted.

Shetland Sheep.—That two new classes for Shetland sheep be instituted, with prize money of £22, to be raised by voluntary contributions among exhibitors. This was agreed to.

Bees.—That classes for Bee-keeping Appliances and honey be instituted, the classification to be further considered at next Meeting.

Suffolk Sheep.—On the motion of Mr G. B. SHIELDS, it was agreed to place the Shropshire sheep after the Suffolk sheep in the Prize List.

Goats.—A letter was read from Mr M'Callum, Secretary of the Edinburgh and East of Scotland College of Agriculture, suggesting that there should be classes for Goats at the Show. It was decided to ask the Societies interested if they would be prepared to provide prizes for these classes: the matter to be considered further at next Meeting.

Local Committee.—On the motion of the CHAIRMAN, Sir Archibald Buchan Hepburn of Smeaton, Bart., was unanimously appointed Convener of the Local Committee.

Date of Show.—The date of the Show was fixed for Tuesday, the 8th July, and succeeding days.

Forage.—The following Committee was appointed to make arrangements for the supply of forage for the Show: Mr J. T. M'Laren, *Interim Convener;* Mr James Allison; Mr William Carrick; Mr J. Inglis Davidson; Mr Thomas Elder; Mr David Ferrie; Mr John M'Caig; Mr G. B. Shields, and Mr P. O. Turnbull.

Law and Parliamentary Committee.

A Minute of Meeting of Committee, dated 8th January, was submitted and approved.

The Minute recommended—

Disposal of Government Stores.—That a representation be made that an adequate opportunity be given for the purchase of Government Stores separately, or in small lots, to suit individual users whose needs are on a small scale.

Potato Crop, 1919.—That the Directors represent—

"That if the Government desires that the production of potatoes shall be maintained, it will be necessary that they should give an adequate guarantee regarding the minimum price of the 1919 crop."

Potato Crop, 1918.—That the Directors represent—

"That it is a matter of urgent importance that the Government should accelerate the purchase and delivery of Scottish potatoes of the 1918 crop."

Grain Drying Sheds.

A letter was submitted, dated 11th December, from the Board of Agriculture for Scotland, stating that they were prepared to recommend that the period of repayment of loans of money granted for Grain Drying Sheds erected with iron pillars and corrugated iron roof should be thirty-five years.

Mr GEORGE W. CONSTABLE suggested that the Board of Agriculture be asked to exhibit a model of a Grain Drying Shed at the Show, and to distribute leaflets at the same time, explaining how loans may be obtained, the period of repayment, and the rate of interest.

This was agreed to.

MEETING OF DIRECTORS, 5TH FEBRUARY 1919.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present.—Vice-President—Sir Archibald Buchan Hepburn, Bart. *Ordinary Directors*—Mr William Carrick; Mr Alexander Cowan; Mr Charles Douglas, D.Sc., C.B.; Mr W. A. Dron; Mr John Elliot; Mr David Ferrie; Mr Alexander Forbes; Mr Murray Little; Mr John M'Caig; Sir Kenneth Mackenzie, Bart.; Captain R. Macmillan; Mr Hugh Martin; Mr William Mungall; Mr Robert Park; Colonel J. L. Reid; Mr John C. Robertson; Mr John P. Sleigh; Mr S. Strang Steel, M.P.; Mr R. D. Thom; Mr Moffat S. Thomson; Mr Phipps O. Turnbull. *Extraordinary Directors*—Mr James Allison; Mr Archibald Cochrane; Mr James I. Davidson; Sir Henry Dundas, Bart.; Mr John Elder; Mr Thomas Elder; Mr A. F. Irvine; Mr A. B. Leitch; Mr Peter M'Intyre; Mr J. T. M'Laren; Mr James M'Queen; Mr George Pendreigh; Mr G. Bertram Shields; Sir Hugh Shaw-Stewart, Bart., C.B. *Honorary Treasurer*—Dr David Wilson. *Honorary Secretary*—Mr Alexander Cross. *Consulting Engineer*—Professor R. Stanfield. *Chemist*—Dr J. F. Tocher.

Potato Crops of 1918 *and* 1919.

A letter was read from the Director of Vegetable Supplies, dated 17th January, acknowledging receipt of Resolutions adopted at last Meeting. With regard to the 1919 crop, the matter was under consideration by the Ministry of Food, and it was hoped that an announcement would be made at an early date. As to the 1918 crop, it was stated that Scottish potatoes were being moved fully as quickly as the English crop, but the rate of movement would be considerably accelerated in the near future, as arrangements had now been completed for shipping large quantities of potatoes to France, and other markets would probably be found for the surplus at a comparatively early date.

The CHAIRMAN pointed out that it had since been announced that the Ministry of Food was to take no action meantime with regard to the 1919 crop, which meant that they gave no guarantee whatever. All they were prepared to say at present was that the maximum, if fixed, would not be lower than that fixed for the 1918 crop.

Disposal of Government Stores.

A letter was submitted from Mr Alexander Walker, Ministry of Munitions, dated 13th January, to the effect that the representations made by the Directors had been duly noted.

Investigation into Animal Diseases.

The CHAIRMAN announced that the proposed Conference between representatives of the Highland and Agricultural Society, the Scottish Chamber of Agriculture, and the National Farmers' Union, would take place on Wednesday, 12th February, at 2.30 P.M.

Australian Soldiers on Farms.

The CHAIRMAN reported that he had had a meeting with the Director of Education, Australian Imperial Forces, who desired to place a number of soldiers on farms in this country for periods of two or three months, particularly on good arable farms, or on farms with Clydesdale studs or Shorthorn, Aberdeen-Angus, or Ayrshire herds. The men would be boarded, on the farm or otherwise, at their own expense, or at the expense of the Australian Government, and they would give work in exchange for the experience gained. The arrangement could be terminated by the farmer at any time. The Australian authorities would take every possible step to ensure that men sent would be entirely suitable. Only men who had shown, not only from their own statements but from their records, that they would be actually engaged in farming, would be sent out. No man would be sent who had not an absolutely clean crime sheet. While it was clearly understood that men sent were prepared to work, it would be a natural obligation on farmers accepting them not to set them merely to uninstructive work, but to show them the instructive work of the farm generally. He hoped that farmers who found themselves able to accommodate and utilise the services of such men would give the matter consideration.

Science.

A Minute of Meeting of Science Committee of 5th February was submitted, and, on the motion of Dr WILSON, Convener, seconded by Mr JOHN M'CAIG, approved.

Schedule of Unit Values.—The Minute recommended that the Schedule of Unit Values of Manures and Feeding-Stuffs be issued, as usual, with the statement which has appeared since 1914, that the Schedule was issued for the sake of continuity. In cases where the maximum prices of fertilisers and feeding-stuffs had been fixed by Government Orders, these prices, and the corresponding Unit Values, would be inserted in the Schedule. The prices of other fertilisers and feeding-stuffs would be the ascertained market prices at the date of issue.

Grass Sickness in Horses.—The Minute stated that the Committee had had under consideration a report by Dr Tocher on the epidemic amongst horses in Forfarshire and neighbouring areas, and recommended that (1) arrangements be made with the Local Committee to set aside portions of fields for the purpose of growing clovers and other plants which had been suspected of being agencies producing the disease; (2) horses should be put on these areas to test the toxicity of the grasses directly on the field; (3) the examinations for bacterial organisms should be continued; and (4) visits should again be made this year to the affected area when outbreaks occur. It was further agreed to recommend the authorisation of an expenditure, not exceeding £250 for the current year, for the purpose of the investigation.

Edinburgh Show, 1919.

Prize List and Regulations.—A Minute of Meeting of Shows Committee, dated 5th February, was submitted and approved.

Stewards.—The Stewards of the various departments were appointed, as follows: *Cattle*—Mr J. Ernest Kerr, with Mr Moffat S. Thomson as Assistant Steward; *Horses*—Mr John M'Caig, with Mr John P. Sleigh as Assistant; *Sheep, Pigs, &c.*—Mr R. Macmillan, with Mr Peter M'Intyre as Assistant; *Forage*—Mr Hugh Martin, with Mr Robert Park as Assistant; *Parade Stands*—Mr David Ferrie, with Mr G. W. Constable as Assistant; *Gates*—Mr William Elliot, with Mr Alexander Forbes as Assistant; *Implements*—Mr P. O. Turnbull, with Mr Thomas Elder as Assistant.

Catering in Showyard.—The following Committee was appointed to meet the Caterers and make arrangements for catering in the Showyard: Mr Charles Douglas, *Convener*, Sir Archibald Buchan Hepburn, Mr J. T. M'Laren, Mr Alexander Cross, and the Secretary.

Forestry Exhibit.—It was agreed to give space in the Showyard to the Royal Scottish Aboricultural Society for a Forestry Exhibition, and to give the usual grant of £20 for prizes for timber.

Board of Agriculture.—An application for space for the erection of an office for the Board of Agriculture for Scotland was granted.

Women's Rural Institutes.—On an application from the Board of Agriculture for Scotland, it was agreed to give accommodation free for an Exhibit by the Women's Rural Institutes, the extent of the accommodation to be determined later by the Convener, the Consulting Engineer, and the Secretary. (30 feet.)

Co-operative Council of Highland Home Industries.—An application for a free stand, made by Sir Kenneth Mackenzie, Bart., on behalf of this Council, was granted.

Special Prizes.—The following special Prizes were accepted and votes of thanks accorded to the donors:—

(1) *Mr Alexander Cowan, Valleyfield.*—£33 in prizes of £12, £9, £6, £3, £2, and £1, for Blackface Shearling Tups which shall have been entirely out-wintered, and shall not have been clipped before 1st May 1919.

(2) *Blackface Sheep-Breeders in Mid-Lothian, per Capt. W. W. Anderson, Colzium.*—£35 in prizes of £15, £10, £5, £3, and £2, for Blackface Shearling Tups, house-wintered or partly house-wintered, which shall have been clipped bare on or after 1st April 1919.

(3) *Suffolk Sheep Society.*—Increased prizes for Suffolk Ewe Lambs.—£8, £5, and £2.

(4) *Mr Dyson Perrins of Ardross.*—£10 for best Highland Pony Stallion.

(5) *Mr P. B. Macintyre, Findon, Conon Bridge.*—£10 for best Highland Pony Mare.

(6) Various other special prizes offered in 1914-15, the offer of which has been renewed.

Grading of Lambs.

A letter was read, dated 8th January, from the Live Stock Commissioner for Scotland, stating that inquiry had been made into the number of lambs graded below the normal price of 1s. 2d. per lb., and it was found that between 1st August and

14th December 1918 the number of lambs valued at less than the maximum price was 5620, or about 1 per cent of the total number slaughtered. The grading in all the areas of Scotland was carried out on the same principle.

Mr JOHN ELLIOT expressed dissatisfaction with the information contained in the letter. He pointed out that it was during the month of August that the grading complained of took place. In no area in Scotland were the lambs graded at that time except in the south-west area, with its centre at Dumfries.

The CHAIRMAN suggested that the Live Stock Commissioner be asked for figures showing the operation of grading during the month of August in each of the areas separately.

This was agreed to, and the Secretary was instructed accordingly.

Costs of Milk Production.

Letters were submitted, dated 22nd January and 4th February, from the Food Commissioner for Scotland, stating that a Travelling Commission had been appointed to investigate the question of the costs of milk production in Great Britain during the winter and summer periods. In the event of the Society wishing to submit any information, a statement was given of the points on which information was desired, and forms for returns were enclosed.

After some discussion, the matter was remitted to the Law and Parliamentary Committee to take such action as might be considered necessary, and to report.

Agricultural Executive Committees and Advisory Council.

A letter was submitted from the Board of Agriculture for Scotland, with copies of the scheme for the reconstitution of the above Committees, &c., and inviting the Society to nominate three delegates to a proposed Conference with the Secretary for Scotland on the subject.

It was agreed to nominate three delegates as requested, and the following Directors were appointed: the Chairman, Dr David Wilson, and Mr J. Inglis Davidson.

On the motion of the CHAIRMAN, it was agreed to remit to the Law and Parliamentary Committee to prepare a statement of the views of the Board for submission to the Secretary for Scotland at the proposed Conference.

Edinburgh Show, 1919.

Veterinary Surgeon.—It was agreed to appoint Professor A. Gofton Veterinary Surgeon for the forthcoming Show.

Finance.

The following Minute of Meeting of Finance Committee, dated 5th February, was submitted and approved.

The Minute recommended that an application from St Kilda for a supply of Seed Oats and Seed Potatoes for the coming spring be granted.

MEETING OF DIRECTORS, 5TH MARCH 1919.

Mr CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, in the Chair.

Present—Ordinary Directors.—Mr Alexander Cowan; Mr Charles Douglas, D.Sc., C.B.; Mr W. A. Dron; Mr William Elliot; Mr David Ferrie; Lord Forteviot; Mr J. Ernest Kerr; Mr William Mungall; Mr Moffat S. Thomson; Mr Phipps O. Turnbull. *Extraordinary Directors*—Mr James Allison; Mr George W. Constable; Sir Henry Dundas, Bart.; Mr John Elder; Mr Thomas Elder; Mr A. F. Irvine; Mr Thomas Kirk; Mr Peter M'Intyre; Mr James M'Queen; Sir Hugh Shaw-Stewart, Bart., C.B. *Hon. Secretary*—Mr Alexander Cross. *Consulting Engineer*—Professor R. Stanfield. *Chemist*—Dr J. F. Tocher.

The late Duncan Stewart, Millhills.

Before proceeding with the business of the Meeting, the CHAIRMAN made sympathetic reference to the death of Mr Duncan Stewart of Millhills, Crieff, and to the services which he had rendered to the Society as a Director. A resolution of regret and sympathy was submitted and approved, the members present upstanding, and the Secretary was instructed to forward a copy to the relatives of the deceased.

Proposed Registration of Farriers.

A letter was submitted from Mr A. E. Hill of the London Farriers' Association, enclosing copy of a Resolution passed by that body, in the following terms:—

"That this meeting emphatically condemns and protests against the proposed new scheme for Compulsory Registration of Farriers, as calculated permanently to throw out of employment Army Farriers who have done valuable work on all the fronts during the War; to render the Farrier Trade a monopoly more severe and restricted than that of the most highly protected profession; to raise the cost of horse-shoeing far above the present rates, and to inflict serious hardship on all horse-owners and agriculturists."

The SECRETARY stated that he had received other letters, on the same subject, from Mr J. A. W. Dollar, M.R.C.V.S., London.

On the motion of the CHAIRMAN, these communications were remitted to the Law and Parliamentary Committee for consideration and report.

Edinburgh Show, 1919.

A Minute of Meeting of Shows Committee, dated 5th March, was submitted and approved.

The Minute contained recommendations regarding the arrangements made with the Showyard Contractor, Classes for Bee Appliances and Honey, Classes for Goats, Parading of Highland Cattle, &c.

Special Prizes.—The following special Prizes were accepted and votes of thanks ccorded to the donors:—

(1) *The Royal Caledonian Hunt.*—£25, in prizes of £15, £7, and £3, for four-year-old Hunters.

(2) *Highland Cattle Society.*—Two "Perpetual" Victory Challenge Cups—one for the best animal in the male classes, and one for the best animal in the female classes of the Highland breed.

(3) *The Baroness Burton.*—£30 towards the prizes in the classes for Goats and £6 for Stud Goats, one-year-old and over, entered by Scottish exhibitors.

(4) *Sir Thomas Dewar.*—Challenge Trophy, value Ten Guineas, for the best female Goat in the Show, and a Special Prize of £5 for the best Cottager's Goat, in milk. He further guaranteed to subscribe any other portion of the prize money which was not raised otherwise.

(5) *Mr J. Milne Henderson, Edinburgh.*—£20 in Special Prizes for a Milk Yield Class restricted to Dairy Shorthorns. (As there were no classes for Dairy Shorthorns in the Prize List, the adjustment of the terms of these Special Prizes was remitted to the Convener and Vice-Convener of the Shows Committee.)

(6) *Mr James C. Caldwell, Scottish Co-operative Wholesale Society, Ltd.*—£10 in Special Prizes for Draught Horses in Harness, confined to exhibits from Edinburgh and Leith.

Reconstitution of Agricultural Executive Committees, &c.

A Minute of Meeting of Law and Parliamentary Committee, dated 13th February, was submitted and approved.

The Minute contained suggested emendations on the Scheme for the reconstitution of District Agricultural Executive Committees, &c., which were submitted for the consideration of the Secretary for Scotland at a Conference on 21st February.

Costs of Milk Production.

A letter, dated 17th February, from the Food Commissioner for Scotland, was submitted, inviting the Society to nominate six members engaged in milk production on a commercial scale to give evidence before the Commission on the Costs of Milk Production. The following were appointed:—

South-West of Scotland.—Mr John M'Caig of Belmont, Stranraer; Mr Quintin Dunlop, Greenan, Ayr.

East of Scotland.—Mr R. Graham, Crosshouse, Milton Bridge; Mr William Russell, Bonnington, Peebles.

Reserve.—Mr R. D. Thom of Pitlochie, Gateside; Mr W. L. Thoms, Benvie, Dundee.

North of Scotland.—Mr George A. Ferguson, Surradale, Elgin Mr William Reith, Kennerty, Peterculter.

Reserve.—Mr Matthew Booth, Darrahill, Foveran.

Implements.

A Minute of Meeting of Implements Committee, dated 5th March, was submitted and approved.

The Minute recommended—

Tractor Ditcher.—That a skilled motor mechanic, to operate the ditcher, be advertised for; and that Messrs John Wallace & Sons be asked to arrange for a preliminary trial of the machine in the neighbourhood of Glasgow as soon as the weather conditions were suitable.

Machines for Topping, Tailing, &c., Turnips.—That the Society make arrangements for a demonstration of these machines in the autumn.

Parliamentary Agricultural Committee.

A letter was submitted from the Secretaries of the newly-established Agricultural Committee in the House of Commons, intimating the desire of the Committee to render any assistance that they could to members of the Society in the way of taking Parliamentary action on subjects in which they might, from time to time, be especially interested.

Analysis of Potatoes.

Mr P. O. TURNBULL raised a question as to the analysis of potatoes for the purpose of ascertaining the amount of their starch content. He said that on the Continent scientists had been making analysis of potatoes, and they had selected varieties with the greatest quantities of starch, and had grown them for manufacturing purposes. He suggested that this matter be remitted to the Science Committee for consideration and report.

This was agreed to.

Investigation into Diseases of Animals.

The CHAIRMAN reported that, since last Meeting, representatives of the Board had attended two Conferences with representatives of the Scottish Chamber of Agriculture and the National Farmers' Union of Scotland. At the second of these Conferences representatives of the Veterinary Colleges were also present. It was agreed to represent to the Board of Agriculture for Scotland that a larger expenditure was necessary in the investigation of diseases of live stock, and also that there was a lack of correlation between Veterinary investigators and the Agricultural public who were interested in this matter. It was also agreed to recommend that an Institute for Research into Animal Diseases should be formed. The members of the Conference thereafter had an interview with the Board of Agriculture for Scotland. Sir Robert Greig received the deputation in an entirely sympathetic way, and he stated that the question had already been considered by the Board of Agriculture, and that they were in favour of such a scheme. The Board of Agriculture not only agreed with what was proposed, but had anticipated it, and it was probable that an active beginning would soon be made in this important work. The position was, on the whole, promising and gratifying, and it was now for the Directors to appoint representatives on a small Committee, which Sir Robert Greig wished to be formed, for consultation with the Board.

The Chairman and Mr G. B. Shields were appointed representatives of the Society on the proposed Committee.

Finance.

The following Minute of Meeting of Committee, dated 5th March, was submitted and approved.

The Minute recommended that the arrears of subscriptions due by members on military service be cancelled, and that such members resume payment of their subscriptions as from the date of their return to civil life.

PROCEEDINGS AT GENERAL MEETINGS.

GENERAL MEETING, 5TH JUNE 1918.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., in the Chair.

New Members.

Seventy candidates were balloted for and admitted Members of the Society.

Election of Office-Bearers.

The following noblemen and gentlemen were elected office-bearers of the Society for the year 1918-19:—

President—The Earl of Rosebery, K.G., K.T., Dalmeny Park, Edinburgh.

Vice-Presidents—The Marquis of Linlithgow, Hopetoun House, South Queensferry; Sir Archibald Buchan Hepburn of Smeaton, Bart., Letham, Haddington; The Right Hon. Sir John Lorne MacLeod, Lord Provost of Edinburgh, 72 Great King Street; Colonel Wardlaw Ramsay of Whitehill, Rosewell.

Ordinary Directors—1915: Mr James Elder, Athelstaneford Mains, Drem; Mr John P. Sleigh, St John's Wells, Fyvie; Mr William Carrick, The Baad, Stirling; Mr Murray Little, Summerhill, Annan; Mr P. B. Macintyre, Findon Mains, Conon Bridge; Mr William Mungall of Transy, Dunfermline; Major W. T. R. Houldsworth, Kirkbride, Maybole; Mr Samuel Strang Steel of Philiphaugh, Selkirk.

1916.—Colonel Alexander T. Gordon of Newton, Insch; Colonel Archibald Stirling of Keir, M.P., Dunblane; Major F. J. Carruthers of Dormont, Lockerbie; Lord Lovat, C.B., D.S.O., &c., Beaufort Castle, Beauly; Mr Hugh Martin, Flowerdale, Kinrossie, Perth; Mr Duncan M. Wallace, Paton Street, Glasgow; Mr John Elliot, Meigle, Galashiels; Mr Robert Park, Brunstane, Portobello.

1917.—Mr William Neilson, Haining Valley, Linlithgow; Mr John M'Caig of Belmont, Stranraer; Mr John C. Robertson, Fodderty, Dingwall; Lord Forteviot, Dupplin Castle, Perth; Mr Charles Douglas, D.Sc., C.B., of Auchlochan, Lesmahagow; Mr Moffat S. Thomson of Lambton, Spotsmains, Kelso; Mr Alexander Cowan, Valleyfield, Penicuik; Mr Alexander Forbes, Rettie, Banff.

1918.—Mr Robert Macmillan of Holm of Dalquhairn, Woodlea, Moniaive; Sir Kenneth Mackenzie of Gairloch, Bart., 10 Moray Place, Edinburgh; Mr David Ferrie of Parbroath, Cupar-Fife; Mr William Donald, Fardale Hill, Kilmarnock; Mr Robert Dickinson, Longcroft, Oxton; Mr Phipps O. Turnbull, Smeaton, Dalkeith; Colonel J. L. Reid of Cromlybank, Ellon; Mr J. Ernest Kerr of Harviestoun Castle, Dollar.

Extraordinary Directors—Mr A. B. Leitch, Inchstelly, Alves, Forres; Mr Peter M'Intyre, Tighnablair, Comrie; Maclachlan of Maclachlan, Castle Lachlan, Strachur; Mr Robert H. N. Sellar, Battlehill, Huntly; Sir Hugh Shaw-Stewart, C.B., of Greenock and Blackhall, Bart., Ardgowan, Greenock; Mr George W. Constable, Traquair Estate Office, Innerleithen; Mr William Elliot, Muirglen, Lanark; Mr A. F. Irvine of Drum, Drumoak; Mr James M'Queen of Crofts, Dalbeattie; Mr R. D. Thom of Pitlochie, Gateside, Fife.

Show District.—Mr James Allison, Redheughs, Corstorphine; Mr Archibald Cochrane, Trinlaymire, Linlithgow; Mr J. Inglis Davidson, Saughton Mains, Corstorphine; Sir Henry Dundas, Bart., M.V.O., Polton House, Lasswade; Mr Thomas Elder of Stevenson, Haddington; Sir Robert K. Inches, 2 Strathearn Road, Edin-

burgh; Mr Thomas Kirk of Abbey Mains, Haddington; Mr J. T. M'Laren, The Leuchold, Dalmeny House, Edinburgh; Mr G. Bertram Shields, Dolphingstone, Tranent; Sir J. Stewart-Clark, Bart., of Dundas Castle, South Queensferry.

Treasurer—Mr David Wilson, D.Sc., of Carbeth, Killearn.

Honorary Secretary—Mr Alexander Cross of Knockdon, 19 Hope Street, Glasgow.

Finance.

Dr David Wilson of Carbeth, Convener, reported as follows: In connection with the demonstration of agricultural tractors and ploughs in October last, the Board of Agriculture for Scotland undertook to pay half the expenses incurred, provided that the Board's share should not exceed £350. The unexpected large entry for the demonstration entailed outlays considerably in excess of what was originally estimated. The actual sum spent was £1085. Under the circumstances the Board of Agriculture had seen fit to increase its contribution to £500, or practically half of the expenses, and a cheque for that amount had now been received. The Society should return its thanks for the Board's generous treatment in this matter.

The Directors had agreed to give a grant of £50 to the Central Committee of the Scottish Women's Rural Institutes, to assist in defraying certain initial expenses in connection with the Committee's work.

Implements.

Mr G. B. Shields, Convener of the Implements Committee, reported as follows:—

"*Mechanical Drainage:* I have to report that during the past six months the Committee has devoted its attention to consideration of the application of mechanical power to the digging of field drains. It is obvious that under present conditions, and especially in view of the scarcity and high cost of hand labour, the subject is one of paramount importance. Extensive inquiries have been made in the United States of America as to the experience with these machines in that country, and the Committee is now in possession of various bulletins and reports on the subject, and also of a valuable statement by the Chief Engineer of the U.S. Department of Agriculture, in which he replies at length to a series of inquiries which were addressed to him by the Committee. In addition, illustrated catalogues of all the different types of machines on the market have been collected and examined by the Committee. The Society's Consulting Engineer has prepared a report setting forth the mechanical details of these machines, their probable suitability to conditions in this country, and their prospects as regards wear and tear, breakages, and cost of maintenance.

"After careful deliberation the Committee have prepared the following Report, which was to-day submitted to and approved by the Board of Directors:—

"The Committee have carefully considered the information collected from various sources regarding land drainage by machinery.

"From the report received from the Chief Engineer of the United States Department of Agriculture, and also from the report prepared by the Society's Consulting Engineer, Professor Stanfield, the Committee consider that the machine most likely to suit the conditions in Scotland is the No. 1 Buckeye, with caterpillar traction and capable of digging drains 11½ inches and 14½ inches wide by 4½ feet deep.

"It is estimated that the cost of this machine at the present time, delivered at a port in the United Kingdom, and including sufficient spares for a reasonable period of working, would be approximately £1500.

"To carry out initial demonstration work with this machine, a skilled staff would be required. To cover this charge, and maintenance, &c., in carrying out a series of exhaustive trials in different localities in Scotland, a further sum of at least £1000 would be necessary. The rate of depreciation on the machine would be not less than 20 per cent per annum.

"As the probable cost of this machine and its maintenance now appears to be considerably in excess of what was originally anticipated by the Directors, the Committee is of opinion that the financial responsibility should not be undertaken by the Society. As the first machine would be largely an experimental and demonstration machine, the Committee consider that its cost and maintenance should be borne by the Government. This view is strengthened by consideration of the fact that land drainage is an undertaking of great magnitude, and is of prime importance in the interests of food production.

"The Committee, however, recommend that the Directors offer to undertake the supervision and management of such a machine during its experimental and demonstration period, and to furnish a full report on the work done, the expense of this report being borne by the Society."

Mr SHIELDS, continuing, said: "Our Chairman, Mr Wallace, and I had a meeting with representatives of the Board of Agriculture for Scotland in London before laying the above Report before the Directors. Dr Douglas also saw the Secretary for Scotland, and I am exceedingly pleased to be able to read to you the following letter, which was received this week from the Board of Agriculture:—

"'29 ST ANDREW SQUARE,
EDINBURGH, 1*st June* 1918.

"'SIR,—I am directed by the Board of Agriculture for Scotland to refer to the investigation which your Society is making as to the possibilities of mechanical drainage and to the information which has been placed before Dr Greig by Mr Douglas, Mr Shields, and Mr Wallace.

"'I have to inform you that the Board are satisfied with the suggestions put forward and the recommendation for the purchase of a "Buckeye" type of American Drainage Machine. The Board are prepared to purchase the machine recommended at a cost, inclusive of freight and delivery to the order of the Highland and Agricultural Society, not exceeding £1500, and if the Society desire to give the order by cable the Board will be agreeable.

"'With regard to the arrangements for testing and using the drainer, I am to say that the Board will be glad if the Highland and Agricultural Society will be responsible for the control and hiring of the machine for one year. It is assumed that if reasonable care is taken to select suitable land for the work, much of the expense of management should be recovered in payment from proprietors and farmers for the drainage work undertaken. In the event of loss, however, the Board are prepared to undertake a portion of the cost.

"'If these proposals meet with the approval of your Directors, the Board will be ready to discuss details of hiring costs, and other arrangements in due course.—I am, sir, your obedient servant, CHAS. WEATHERILL, *Secretary*.

"'The Secretary,
The Highland and Agricultural Society,
3 George IV. Bridge, Edinburgh.'"

Mr SHIELDS, in conclusion, said: "I think we have every reason to be satisfied with the contents of that letter, and it goes far, I think, to put life into the Implements Committee of the Society, when their work is recognised in a tangible form and so quickly after the conclusion of their efforts, by an offer from the Board of this kind. We are very grateful to the Board for the offer. A Sub-Committee has been appointed to-day to meet with the Board of Agriculture and discuss further details, and get the draining-machine ordered, and arrange as to its working charges and general details of the whole arrangement, so that we trust that in a very short time, by the efforts of the Highland Society, Scotland will be in possession of the first drain-digging machine in the country.

"*Potato-Lifting Machines.*—The Committee has also had under consideration possible improvements in Potato Diggers. A large amount of information regarding the types of diggers in use in America has been collected, and also information regarding the experience with these machines when tried under the different conditions of soil and climate prevailing in this country.

"*Grain Drying Sheds.*—In January the Directors decided, on the motion of Mr George W. Constable, to urge upon the Board of Agriculture for Scotland the great necessity for furthering, by financial assistance or otherwise, the erection of Grain Drying Sheds throughout Scotland, in order to safeguard the large amount of grain to be grown this year. On 1st March a Sub-Committee had an interview with the Board of Agriculture, when proposals were submitted for the erection of these sheds, and the suggestion was made that funds for their erection should be advanced on loan from the Permanent Improvements Fund at an annual payment to meet interest and sinking-fund equal to the pre-war rate, any deficit being made good by a grant from the Treasury. The Sub-Committee's proposals were most favourably received by the Board, and it is satisfactory to report that they have been acted upon without delay. The Board announce that they have succeeded in securing priority in the use of material for the erection of fifty sheds of size 120 feet long by 24 feet wide by 16 feet high, or a proportionately larger number of smaller sheds, and District Agricultural Executive Committees have been invited to bring the matter under the notice of farmers and landowners with a view to inviting applications for sheds and allocating these amongst the most suitable holdings. The question of the terms on which money for erection of the sheds will be advanced is still under consideration."

Agricultural Education.

Mr Alexander Cross of Knockdon, Convener, submitted the Report on the examination held at Leeds in April last for the National Diploma in Agriculture. 17 candidates presented themselves for examination. 4 candidates were from Scotland.

As a result of the examination 5 diplomas were awarded.

Of the 17 candidates, 2 appeared for all the subjects; 5 had passed certain subjects in 1917, and were completing the examination this year; and of these 4 obtained the diploma. The remaining 10 candidates presented themselves for a group of three or four subjects, and of these 9 passed in the subjects for which they appeared, and are entitled to appear for the remaining subjects in 1919.

Law and Parliamentary Committee.

Mr Charles Douglas, D.Sc., C.B., Convener, reported as follows:—

"Since last half-yearly General Meeting the Directors have continued to watch closely the various Orders issued by Government Departments with regard to agricultural products, and have taken action with regard to the following:—

"*Potato Orders.*—Representatives of the Society took part in a joint-deputation, with the Scottish Chamber of Agriculture and the National Farmers' Union of Scotland, to the Food Controller, on 12th February, when representations agreed to at previous meetings were submitted to him. Special stress was laid on the necessity for active steps being taken to redeem the pledge that was given with regard to the price to be paid for the 1917 crop, and an assurance was received that the pledge would be implemented. Other details regarding the 1918 crop were fully discussed, and the Food Controller undertook to give the views expressed his careful consideration.

"*Heifer Calves of Ayrshire Breed.*—Representations were made to the Food Controller and the Chief Live Stock Commissioner as to the undesirability of the inclusion in the Live Stock (Restriction of Slaughter) Order of all Heifer Calves of the Ayrshire breed, and after various negotiations an Order was issued on 16th March in which these calves were entirely excluded.

"The Directors also took appropriate action with regard to *the Grading of Fat Cattle* and the prices of *Milk*, *Hay*, and *Wool*.

"In March the Directors decided, on the motion of the Chairman, to appoint a Law and Parliamentary Committee to report to the Board on legislative and administrative matters affecting agriculture. It was felt that the time had arrived when the appointment of such a Committee was desirable. The degree of State intervention in agriculture had enormously increased, and was likely for some time to be maintained. The Society could not fully discharge its duty to agriculture without dealing with such matters more generally and regularly than had been the practice in the past, and it was felt that the members of the Society expected and desired that it should do so.

"The Committee appointed was so constituted as to be representative of the various districts of Scotland. Since its appointment it has dealt with the following matters, and on its recommendation suitable action has been taken by the Directors in the proper quarters, details of which have appeared in the press reports of the Board meetings,—*The production, distribution, and price of Milk; the prices of Fat and Store Cattle; the sale of Stock by dead weight; the Potato Order*, 1918; *the Education (Scotland) Bill*, and various other matters."

Science.

Mr James Elder submitted the following Report by the Convener of the Science Committee:—

"*Station for the Testing and Registration of Agricultural Plants.*—The Directors are gratified to be able to report that, as a result of representations made by them to the Board of Agriculture for Scotland, regarding which reference was made at the half-yearly meeting in January, and after further discussion of the subject, the Board has decided to establish a Station in Scotland for the Testing and Registration of Agricultural Plants. It is proposed to lease for this purpose a suitable farm of from 200 to 250 acres within easy reach of Edinburgh. The station will be controlled by the Board of Agriculture for Scotland assisted by a representative committee, and the work undertaken will include the following: (*a*) the testing of all kinds of agricultural seeds with a view to ascertaining the cropping powers of the different varieties; (*b*) the testing of one variety against another and against standard varieties; (*c*) the testing of new varieties with a view to discovering whether they really differ from existing varieties; (*d*) the determination of synonyms; (*e*) tests for the purpose of ascertaining the disease-resisting powers of the different varieties; (*f*) in the case of roots, to ascertain the intrinsic qualities of the different varieties for feeding purposes.

The station will issue certificates of registration on the results of the tests made. The Directors regard the action taken by the Board of Agriculture as particularly opportune in view of the importance of securing that the high reputation for seed purposes of Scottish potatoes and cereals exported to other countries should be maintained."

Chemical Department.

Dr J. F. Tocher, Consulting Chemist to the Society, submitted a Report on the work done in his department.

The substance of Dr Tocher's Report appears in another part of this volume.

After the Report by Dr Tocher, Dr Wilson said: "There is one point of which the members should be informed. It has been brought to the notice of your Board that the cost of making analyses for members of the Society has very greatly increased during the time of war. The cost of chemicals and apparatus has increased many times over, and the cost of assistance has also increased. Your Directors have thought it necessary to increase the fees for analyses, but the cost to members of the Society will be the same as before. That is really increasing the benefit to members. The Society used to pay one-half of the cost of analyses, the members paying the difference. During the war the Society will pay two-thirds and the members one-third only."

Report by Botanist.

Professor A. N. M'Alpine, Botanist to the Society, reported as follows: "I have the honour to report that, during the season 1917-18, I have examined twenty-four samples of grass and clover seeds for purity and germination. The samples tested give the following results:—

Name.	Purity.		Germination.	
	Max. %	Min. %	Max. %	Min. %
Clovers—				
Red clover	99	97	88	72
Alsike clover	98	—	87	—
White clover	94	—	72	—
Grasses—				
Perennial ryegrass	98	95	91	86
Italian ryegrass	86	—	84	—
Timothy	100	85	99	86
Meadow fescue	94	—	52	—
Tall fescue	97	—	94	—
Cocksfoot	93	—	87	—

Report by Zoologist.

Dr R. Stewart MacDougall, Consulting Zoologist to the Society, submitted a report on damage to oat crops in Perthshire, Forfarshire, and South Aberdeenshire by leather-jackets (*Tipula*) or larvæ of the daddy-long-legs.

The substance of Dr MacDougall's Report will appear in the 'Transactions' for 1918.

Publications.

Mr Charles Douglas, D.Sc., C.B., Convener of Publications Committee: "I have to report that the preparation of the annual volume of 'Transactions' is proceeding, and it is expected that it will be issued shortly."

The proceedings terminated with a vote of thanks to the Chairman.

SPECIAL GENERAL MEETING, 26TH JULY 1918.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., in the Chair.

Station for Research in Plant-Breeding.

The CHAIRMAN said it fell to him, as Vice-President, to preside in the absence of the Earl of Rosebery, the President. The documents in the hands of members explained the reason for holding that special meeting, the object of which was as follows: "To consider the recommendation by the Board of Directors with regard to the institution of a Research Station in Plant-Breeding in Scotland; and further, to consider and, if approved, authorise a grant of £2000 by the Society towards this object."

The SECRETARY read the Minute of the meeting of Directors held that day.

Dr CHARLES DOUGLAS, Chairman of Directors, said he had been instructed to move that the meeting approve of the proposal now laid before it. As they were aware, the Charter of the Society ordained that, while the Directors for the time being were empowered to deal with the Society's income on behalf of the members, the right was reserved to the members to deal with any application of capital. That was a wise arrangement, and corresponded with the fact that the money was the property of the Society and of the members for the time being. He would not enlarge on the object for which the members were asked to vote, because they were all aware of its merits and importance. At the Conference, which was to follow that meeting, they would have an opportunity of going fully into the importance of the question. Meanwhile he pointed out that the sum they were asked to vote was larger than any sum ever paid by the Society for any purpose. He hoped the members would agree that the importance of the matter was so great as to warrant this unprecedentedly large contribution from the funds. In the ordinary course of the operations from year to year the Society was able perhaps to do more for the animal industry in agriculture than in the improvement of cropping, and it was therefore thought that the members would gladly welcome this opportunity of rendering a signal service to the future of Scottish agriculture by showing the Society's own deep interest in the matter and giving a lead to contributors also. He did not think he need argue the matter, but if any questions arose they would be glad to answer them so far as they could. He moved the approval of the grant of £2000, of which due notice had been given.

Mr JAMES ELDER seconded the resolution. He said he considered this matter was of the very greatest importance to the future of agriculture. There was no doubt whatever that Scotland had lagged behind in this matter compared with countries on the Continent and with our own Colonies, and if Scotland was to hold its own in a reconstructed agriculture it was imperative that more attention should be paid to farm plants. It was therefore right that the Highland and Agricultural Society, as the premier Agricultural Society in Scotland, should take the lead in this matter, and he hoped the members would pass the resolution unanimously.

The motion was put to the meeting and unanimously agreed to.

On the motion of Dr DOUGLAS, a cordial vote of thanks was accorded to Sir A. Buchan Hepburn for presiding.

ANNIVERSARY GENERAL MEETING, 8TH JANUARY 1919.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Vice-President, in the Chair.

The President.

The CHAIRMAN referred to the unavoidable absence, through illness, of the President of the Society, the Earl of Rosebery. He was glad to learn that his lordship's health was improving, and it was hoped that when the Show of 1919 came round he would be able to officiate in his important duties as President, which no one else could discharge so well as he.

New Members.

Two hundred and forty-four candidates were balloted for and admitted Members of the Society.

Vacancy on Board of Directors.

On the recommendation of the Board of Directors, the following gentlemen were elected to fill vacancies on the Board :—

Ordinary Directors—Mr William A. Dron, Crieffvechter, for the Stirling Division, in room of the late Mr William Neilson, Haining Valley.

Extraordinary Directors—(1) Mr George Pendreigh, Upper Dalhousie, Bonnyrigg, in room of the late Sir Robert K. Inches ; (2) Mr John Elder, Tweedside Implement Works, Berwick-on-Tweed, in room of the late Mr R. H. N. Sellar.

Finance.

Dr David Wilson of Carbeth, Convener of the Finance Committee, submitted the Accounts of the Society for the year to 30th November 1918. The receipts for the year from all sources reached a total of £7979, 1s. 5d. This sum exceeded the outlays by £3164, 19s. 4d., including life subscriptions to the amount of £667, 13s. In the past year the expenditure on educational work amounted to £274, 5s. 8d., and on work in the chemical and botanical departments to £386, 5s.

He moved the approval of the usual grant of £20 to the Scottish Meteorological Society, and £5 to the Society for the Prevention of Cruelty to Animals, for the year 1919.

Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., seconded, and the motion was agreed to.

Argyll Naval Fund.

Dr David Wilson submitted the report on the Argyll Naval Fund for 1917-1918, which showed that the income for the year amounted to £316, 4s. 4d., while the expenditure was £227, 10s. 6d., in grants of £40 to four naval cadets, and three grants of £20.

Show of 1919.

Mr J. T. M'Laren, Convener of the Shows Committee, reported on the arrangements for the Show of the Society, which it was proposed should be held at Edinburgh in July 1919. He said he was very pleased indeed to report, on behalf of the Board, that it now appeared to be possible to hold a Show this year. The Directors feared that there would be considerable difficulty in holding the Show, but the difficulty had largely, if not wholly, disappeared. After careful inquiry as to railway facilities, and the supplies of timber that would be available, and other material for the equipment of the Show, they had been assured that these would be satisfactory. Now that the control of timber was—if not wholly removed—in course of removal, there would be an ample supply of materials for the Showyard. At the same time, he must warn members that it would be a very expensive Show, because all the circumstances pointed in that direction. He need not go far into figures, because the Board had only dealt with probable figures, but he might say that, as compared with the Edinburgh Show of 1907, there would this year be an increase in expenditure of at least £7000. The Directors had had considerable anxiety in fixing on a suitable site for the Show, but on the initiative of the Lord Provost, Magistrates, and Town Council of Edinburgh, who had come forward in the handsomest way possible, they had obtained a site at the Meadows. This was an ideal site, situated practically in the centre of the city. No doubt, for an Edinburgh Show, the Society would have been better pleased if they had been able to get a larger space, but he was assured there was ample room. Railway facilities were very satisfactory, and visitors would find most convenient access to the Show by the tramway system, which would deposit them at the gates of the Showyard. The Directors had that day decided to hold the Show on the 8th of July and the succeeding days of the week. They had not yet, however, decided whether to hold it on four or five days.

Grants to Local Societies.

Mr J. T. M'Laren submitted the Report on District Shows and Competitions, showing that in 1918 grants of money and medals had been given in 25 districts. The total expenditure under this head amounted to £211, 1s. For the current year the Directors proposed the following grants: (1) Under section 1, eighteen districts for grants of £12 each for cattle, horses, and sheep, and fourteen districts in intermediate competition, with a grant of three silver medals to each ; (2) Under section 2, thirteen districts for grants of £15 each for stallions ; special grants of £40 to the Highland Home Industries ; £20 to Kilmarnock Cheese Show ; £25 to Scottish Horticultural Association for exhibition of potatoes ; £15 to Scottish Women's Rural Institutes (Lothian Federation) ; two silver medals each to Ross-shire Crofters' Club ; £5 to Shetland ; £3 each to Orkney, Sanday, North Uist, East Mainland, and West

Mainland; a gold medal and a silver medal to the British Dairymaids' Association; seventeen districts for two medals each; the usual medals at ploughing and hoeing competitions; two medals each to six districts for cottages and gardens; Long-Service Medals and Certificates, say £30—making the total sum offered in 1919, £700.

Science.

Mr Murray Little, Annan, submitted the following Report by the Convener of the Science Committee:—

Scottish Station for Research in Plant-Breeding.—In accordance with the decision of the Directors, reported to the members of the Society at the Extraordinary General Meeting on 26th July 1918, a Conference was held on that date of Directors of the Society, the Scottish Chamber of Agriculture, the Central Executive of the National Farmers' Union of Scotland, and the Executive Committee of the Scottish Seed Trade Association, to consider the proposal for the institution of a Scottish Station for Research in Plant-Breeding, to promote the objects in view, and to appoint a Committee to deal with details. The Conference was presided over by the Right Hon. Robert Munro, K.C., M.P., Secretary for Scotland, and was largely attended. A full discussion took place, and it was unanimously decided to proceed with the scheme. A large and representative Committee was appointed, consisting of representatives of the bodies named, together with representatives of the Potato Trade Associations, Corn Millers, Ryegrass Machiners, and Corn and Agricultural Merchants.

The Secretary for Scotland, in expressing his approval of the scheme, said he proposed to sanction the expenditure from public funds towards the capital required for the establishment of a plant-breeding station, of pound for pound of the amount raised by voluntary subscription up to a reasonable limit.

The Committee have prepared a Memorandum setting forth the objects of the proposed station, and this, together with an appeal for subscriptions, has been issued to all farmers in Scotland whose holdings extend to 50 acres or over, to proprietors, and to members of the seed trade and other trades allied to Agriculture. The various bodies represented on the Committee are actively co-operating in the raising of funds amongst their members. The response so far has been encouraging, and it is hoped that the amount required will be subscribed in the near future.

Investigations.—The field and laboratory experiments on *Mineral Phosphates* being conducted by the Society's Consulting Chemist, Dr Tocher, and the investigation into *Grass Sickness in Horses*, in Forfarshire and adjoining areas, being conducted by Dr Tocher and the Society's Consulting Botanist, Professor M'Alpine, are proceeding, and it is hoped that a report on these may be submitted at an early date.

Report by Chemist.

Dr J. F. Tocher, Consulting Chemist to the Society, reported on the work of his department during the year 1918.

The substance of Dr Tocher's Report appears in another part of this volume.

Law and Parliamentary.

Mr Charles Douglas, D.Sc., C.B., Convener, reported as follows: The Law and Parliamentary Committee has met frequently during the past half-year, and on its recommendation action has been taken by the Board of Directors with regard to the following:—

Settlement of Sailors and Soldiers on the Land.—At the request of the Secretary for Scotland, a Memorandum was prepared on the above subject, and forwarded to him, setting forth the views of the Board with regard to certain aspects of the problem, including the following: the breaking of leases; the acquisition of land; administration; and finance.

Miscellaneous.—Other matters dealt with included—The Grading of Store Lambs; Winter Milk Prices; Cereal Prices; Potato Prices and Disposal; &c. As reports of the action taken by the Directors with regard to these have appeared in the press from time to time, it seems unnecessary to deal with them here.

Implements.

Mr P. O. Turnbull, Convener, reported as follows:—

Mechanical Drainage.—The Tractor Ditcher ordered by the Society from the United States of America in July last has recently arrived in this country, after considerable delay, due to the shortage of shipping space. It is at present being erected, and it is hoped that a preliminary trial may take place at an early date. In the event of this being satisfactory, arrangements will be made for demonstrations at various centres, of which due notice will be given in the press.

Education.

Mr Alexander Cross of Knockdon, Convener, reported on the results of the twenty-third examination held last autumn for the National Diploma in Dairying. At the examination in England there were 29 candidates, of whom 19 obtained the diploma and 10 failed; at the examination at Kilmarnock there were 22 candidates, 14 getting the diploma and 8 failing. The names of the successful candidates, as well as the names of the winners of the National Diploma in Agriculture at the examination held last April, will be published in the next volume of 'Transactions.'

The examinations for these diplomas will again be held during the ensuing year.

The Society's examinations for First and Second Class Certificates in Forestry, which are held in alternate years, will be held this year on 25th, 26th, and 27th March.

Publications.

Mr Charles Douglas, Convener, reported that the annual volume of 'Transactions' for 1919 was being prepared, and, it was hoped, would be published in due course. He said the Committee owed the members of the Society an apology for the delay in publication of the 'Transactions' for last year. Mr Stirton, the Editor, was not responsible for the delay. He had accelerated its progress as much as possible. The delay was due to some of the contributors to the volume being engaged in war work, and to the extraordinary difficulty in getting printing and bookbinding work done. He was confident that there would be no further cause for complaint.

Agricultural Executive Committees and Advisory Council.

Mr Archibald M'Neilage, with the consent of the meeting, moved the following motion:—

> "That this meeting cordially endorses the resolutions passed by the Board of Directors to-day, in favour of the constitution of the proposed Agricultural Council and District Agricultural Committees being submitted to the Directors of this Society and kindred Associations before any further steps be taken to establish the said Agricultural Council and relative District Organisations. Further, that copies of this resolution be forwarded to the Secretary for Scotland and the Board of Agriculture for Scotland."

Mr M'Neilage said the matter had been before the Directors' meeting that day. He was there in his professional capacity, and he noticed that some of the Directors did not really know what the letter from the Farmers' Union was about, and he was not surprised at it, because the whole business was sprung suddenly on a meeting of representatives of agriculture. The motion asked for delay, and for the constitution of the proposed new agricultural bodies being submitted to the old organisations, which had carried on work of this kind for many years with a considerable measure of success. The purpose was to create this new body by statute. The motion asked that at least the voluntary organisations should have an opportunity of considering the proposed constitution and of asking whither this new proposal was tending. Mr Munro's objection, at the conference held a month ago, when it was suggested that the constitution be submitted to the voluntary bodies, was that there was need for haste—for the thing being done, in case it should not be done at all. He did not know what Mr Munro had in his mind, but his impression was that Mr Munro felt that there was uncertainty as to the result of the impending General Election, and that those who then had the matter in hand might find themselves out of power after the election was over. If that was Mr Munro's reason for pushing the matter then, that reason did not now exist, because Mr Munro and those with him were now set firmly in the saddle of the Government of the country. There was therefore no reason for undue haste, and in all fairness the three voluntary organisations ought to have an opportunity of considering the constitution of the new organisation which it was proposed to set up by statute, and of giving their opinion on it. If after examining the constitution of these new bodies the voluntary organisations came to the conclusion that it was to be a good thing, and for the distinct benefit of agriculture, the statutory organisation would come into force with an amount of approval behind it which it would not otherwise have. The Agricultural Council in Ireland was a kind of half-yearly Parliament where agricultural subjects were discussed by delegates from all parts of the country, but in Ireland there were no agricultural societies corresponding to the Highland and Agricultural Society, the Scottish Farmers' Union, or the Scottish Chamber of Agriculture. These bodies ought not to be superseded by such a statutory body as was proposed, without their having an opportunity of forming an opinion on its constitution.

Dr Douglas said that he had been in regular consultation with the Board of

Agriculture on this matter, and he had only to point out that the reason for haste at the meeting to which Mr M'Neilage referred was in connection with the approaching meetings of the County Councils. These meetings were now over, and that objection could not now exist. He could not see why any one could have any objection to submitting these proposals in detail to agriculturists. Although the Highland and Agricultural Society had not taken any action in the matter, the Chamber of Agriculture and the Farmers' Union had expressed an opinion that these Councils would be an appanage of the Board of Agriculture. The Directors of the Society had already passed the resolution, and they had no objection to the "more intelligent" members of the Society supporting them in their action.

Mr Isaac Connell said he would not move an amendment, but he wished to explain to the meeting that the Corn Production Act provided that, when Part IV. came into operation, the Defence of the Realm regulations ceased. The existing Agricultural Committees also ceased, and successors of these Committees had to be brought into existence. The Act expressly provided that the Committees in the first instance should consist of or comprise the same persons as were members of the existing Committees up to the termination of the war. He believed it was the case that it was desirable and important in many counties that there should be some change in the personnel of the Committees and the general constitution of them, and it would be understood that that was desirable if they were to be constituted under an Act of Parliament. This was the penalty of delay, that if they did not proceed as quickly as possible the first Committees under the Corn Production Act were just duplicates of the existing ones. That was the reason for not delaying longer than was necessary. He remembered when the Scottish Chamber of Agriculture was discussing and criticising the Small Landholders Act, they passed a unanimous resolution that there should be established, along with the Board of Agriculture for Scotland, a Scottish Council of Agriculture, on lines similar to those of the Irish one, and they were disappointed. Nobody suggested that this Council should supersede the existing institutions. He was not going to enter into controversy on the matter, and he saw no objection to the resolution, barring the question of delay. The Agricultural Sub-Committee of the Reconstruction Committee appointed by the late Prime Minister had recommended, with a minority of one, the constitution of such a Committee, and their Report had been printed and circulated. At any rate a great many people saw it. A great many did not see it. The proposal was not novel. It was before the Scottish Chamber for many years, and they wanted it carried out heartily. The Secretary for Scotland had announced the constitution of this Committee—a body composed of two agriculturists from each county in Scotland. That was for the purpose of bringing the Board of Agriculture into closer touch with agricultural opinion, and because the Board failed to consult agricultural opinion. He only wished to give some information to the meeting, and not to offer any opposition to the motion.

The motion was agreed to unanimously.

The proceedings terminated with a vote of thanks to the Chairman.

PROCEEDINGS AT CONFERENCE

WITH REGARD TO

THE INSTITUTION OF A STATION FOR RESEARCH IN PLANT-BREEDING IN SCOTLAND.

A CONFERENCE of the Directors of the Highland and Agricultural Society of Scotland, the Directors of the Scottish Chamber of Agriculture, the Central Executive of the National Farmers' Union of Scotland, and the Executive Committee of the Scottish Seed Trade Association, was held at 3 George IV. Bridge, Edinburgh, on 26th July 1918.

The Conference was convened by the Directors of the Highland and Agricultural Society, and the business before the Meeting was to consider the proposal for the institution of a Research Station in Plant-Breeding in Scotland; to promote the objects in view; and to appoint a Committee to deal with details, confer with the Board of Agriculture, and co-operate in raising the necessary funds.

The Right Honourable ROBERT MUNRO, K.C., M.P., Secretary for Scotland, occupied the chair, and was accompanied on the platform by Sir Robert P. Wright and Dr R. B. Greig, both of the Board of Agriculture for Scotland. There was a large attendance of representatives of the bodies above mentioned.

The CHAIRMAN said his first and most obvious duty was to express his appreciation of the honour which the Conference had done him in asking him to preside at a Conference, the importance of which, he thought, no one could gainsay. It was manifest that after the war it would be necessary for all our industries to increase their production, if for no other reason than in order to meet the heavy taxation which, he was afraid, was inevitable in their time, and no industry probably was capable of greater expansion than the agricultural industry. They had only to remember what Germany had accomplished in this matter. They had only to remember that by her agricultural organisation, dealing with inferior soil and indifferent climate, she had reached the point of being wellnigh self-supporting; and experts assured them that in the case of our country, if we utilised to better advantage the resources which were ready to our hand—the resources of science, of land, and of labour—we could also hope to be nearly self-supporting, at any rate in the matter of cereals and of dairy produce. There was no aspect, he thought, of agricultural science which offered more promise in the direction of increasing production upon farm lands than the improvement of plants, and he would add that there was no aspect of agricultural science which in the past had been more neglected than that particular aspect with which they were concerned that day. But their knowledge was increasing from time to time, and they hoped that in the future they might achieve much more than they had achieved in the past. There had been great improvement in many directions. They had increased their knowledge, to a very large extent, of the effect of fertilisers on the soil. They had increased the efficiency of machinery and of implements, and they had also improved their live stock, and all that was to the good; but besides all these problems, there lay this particular problem of the improvement of plants, a problem which, he ventured to think, had not received the attention which its importance merited. Other countries had bestirred themselves in this matter. They knew as well as he did, if not better,

what had been achieved in plant-breeding in Sweden, Australia, and Canada, to say nothing of France and Germany, and they had surely reached the point at which they should make a double resolve. He thought it would commend itself to their view (at least it did to his), that Scotland should no longer lag behind, and should refuse absolutely to be tied to the chariot-wheels of England in the development of any plant-breeding scheme.

Certain steps had, as they already knew, been taken, and at the instance of the Highland and Agricultural Society he had authorised the acquisition of a farm, and the necessary expenditure upon it, for the conduct of certain important experiments. So far so good, but he did not think that was quite enough. They wanted to go a step farther. They would all be agreed as to the importance of research and of developing their programme along these lines for the production of plants that should be weather and disease resisting, and adapted to all soils, climates, and purposes. The importance of that problem he need not urge on a meeting of agriculturists who were more familiar with the practical work than he could possibly be, but it was because he saw the urgency of the problem that he had pleasure in presiding over a meeting which he hoped would be the nucleus of the great national movement which he had just adumbrated.

He was glad to hear that the co-operation of farmers, agriculturists, and seed-merchants had already been achieved. That was all to the good. That was far better than depending exclusively on any Government Department for the development of a scheme which was so plainly in the national interest. That co-operation, he hoped, would be developed in the arrangements to be made in the course of that afternoon. At the same time he quite recognised that they were entitled to look to the Board of Agriculture, and to himself as its head for the time being, for encouragement in this important question—for the benediction of the Board and the Secretary for Scotland on their efforts. But the benediction in some churches in the days of his youth was followed by a collection, and they would probably desire that he should translate into practical terms the goodwill which he assured them the Board of Agriculture extended to the proposals to be discussed that day; and he desired to say that after giving the best consideration to the matter that he had been able to give it, he proposed to sanction the expenditure from public funds towards the capital required for the establishment of a plant-breeding station of pound for pound of the national subscription up to a reasonable limit. He hoped that would convince them, if convincing were needed, not only of the interest of the Government in this scheme, but also of the confidence they entertained that that scheme could be carried out to a successful issue.

He concluded by calling on Dr Charles Douglas, the Chairman of the Board of Directors of the Highland and Agricultural Society, to move the first motion.

Dr Douglas moved the following Motion: "That this Conference approves the proposal to create in Scotland a Station for research in Plant-Breeding, and commends it to the support of the Board of Agriculture for Scotland, and all interested in the industry of Agriculture." He said that after the very gratifying statement of the Secretary for Scotland, it was quite evident that he need not make any appeal to the Board of Agriculture, because they would be beating on an open door; but perhaps they would allow the terms of the motion to remain as they stood, if only as a record of the expectations agriculturists had formed, and of the degree in which their wishes had even been anticipated. They all, he thought, recognised that they had in the Secretary for Scotland, as head of the Agricultural Administration in this country, an energetic and sympathetic friend of agriculture, who, without pretending to technical knowledge, had always been open to the best information available, and had always made haste to act on it; and while there was no doubt occasional criticism of the Board of Agriculture, every one of those present would say that the Board had always been ready to meet them half-way in any attempt to make progress in the development of Agriculture. He would be concealing a very important fact in the history of this movement if he did not say that they had all along been deeply indebted to the unofficial and personal help of Dr Greig.

He did not think the Conference needed any argument to convince it of the desirability of passing this resolution. They were all aware, as practical men, of the infinite importance of having good seed as the very basis of agricultural improvement; but they knew that, in its most elementary application, if they endeavoured to carry it out in practice, they were not, possibly most of them, fully aware of what could be done in production by inquiry and research and improvement of breeding of plants. There was no branch of agricultural knowledge whose future was more open than this one, and he thought that all of them who faced the necessity of a great increase in the productiveness of our native agriculture must regard this as one of the prime necessities of the case.

Some of those present would remember that many of them met a year ago at an Agricultural Conference in Edinburgh, at which many subjects were discussed. That

was a very general conference, at which nothing was, or, in the nature of the case, could be translated into practice. Gradually they hoped to see many of the matters there discussed brought into practical and material existence, and their meeting to-day was a definite step in promoting the vital importance of research in Scotland. Reconstruction, after all, must fundamentally be the development of knowledge leading to improvement of practice. It was that or it was nothing. It was not "in our stars, but in ourselves," and it was only by developing what they had to deal with that they would be able to reach progress in agriculture which was so essential to them.

The Secretary for Scotland said they were convinced that they must have a Scottish institution to carry on their own work. They were perfectly aware that science had no frontiers, and they recognised to the full the avoidance in scientific effort of an undue increase in the number of scientific institutions, but it was perfectly possible to err in the opposite direction and to have too few channels, and render scientific effort sterile and unproductive. They had good reasons for having a research station in Scotland in charge of Scotsmen. That was no matter of mere sentiment of nationality, although that was not to be made light of, but it was a hard fact that the conditions under which plants grew, and the kinds of plants which needed to be investigated, were different in the northern parts from what they were in the southern, and that must determine research in the scientific aspect, and more particularly in its practical bearing.

They were to be asked to appoint a representative Committee to deal with this question with due care and deliberation, and he was not prejudging the ultimate decisions of that Committee, but they were often asked what they had in view in the way of material resources for this plant-breeding research. He was putting it forward merely as the view of most of those who had been discussing the matter most closely when he said, in the first place, that they regarded the sum of £20,000 as the least that could be aimed at for the actual purchase of buildings and equipment of the necessary farm; but more than that was necessary. No institution of that kind could thrive unless it had an independent income for its own security, and that income must be independent of all outside interventions. They wished to have an institution which should not merely be an annexe or department under the charge of the Board of Agriculture. He did not think that that was the wish of the Board of Agriculture themselves, and he was not at all sure that they would be prepared to undertake such a charge. They wished a self-governing institution, but such an institution must not depend upon the accidents of annual subscriptions. There might be times—he might go farther and say there would certainly be times—when any institution worth its salt must have to go on for a time without being able to show any immediate practical results, and if they were dependent on an annual income, and if they were going on for a year or two and produced nothing, they were imperilling the existence of such an institution. They would not get the best man of science, and that was the man they needed, at the head of this station. They must give such a man freedom to go into the most fundamental research, and they must not tie him to subscribers who wished to see a dividend and something definite going on from year to year. This investigation could not fail to be of the most practical kind, but the freedom of the investigator must not depend on that. If he were to be so dependent they would not get the man they needed, and he should not have to subordinate himself to such a consideration.

The condition of success was that they should attach to the institution the very best scientific men they could get to engage in the work. They were all convinced of the desirability of the object. They were all agreed, he thought, that not only the Board of Agriculture, in the name of the State, must play its part in what was a matter vital to national welfare; they also wished to commend this object to those who had profited in the past from the labours of scientific men, and to those who wished their successors to benefit to a greater extent than themselves.

Mr Hugh W. B. Crawford, President of the Scottish Chamber of Agriculture, seconded the motion. He said he had never known any scheme put before agriculturists which had received so much encouragement. It was due to Mr James Elder, who was a man among men, that it had caught on so well, and it would go on until it was perfected. This was only one of the things that were to help agriculture in the future under the word "reconstruction." That was a very fine word, and they had all been talking of it for days and months past, but if reconstruction was to come to help the farmers in England and Scotland, this scheme was worthy of entire support. The members of the Chamber of Agriculture had had a talk about it that morning, and, as before recommended, they agreed to support it with the utmost goodwill, and to institute a collection among their members to support this laudable institution.

After referring to the introduction of the "Champion" potato, and the splendid work done by individuals in the raising of new varieties practically immune from

disease, he said that perhaps the Carnegie Trustees might be induced to help this movement. They had any amount of money to spend on such schemes as this, and if they were approached they might think it was a fit object on which to distribute some of their surplus cash.

Mr WILLIAM CUTHBERTSON, Vice-President of the Scottish Seed Trade Association, said the seed-merchants were most anxious that the station should not be under Government control. He presumed it would be carried on somewhat in the form of a trust. He would rejoice if they had twenty directors, half of whom were farmers, one fourth seedsmen, and one fourth Government officials. Referring to the development of potatoes, he said they could raise the best varieties in Scotland and send them to their friends in the south. Some of the best work in cereal breeding had been done in Scotland. Research work and plant-breeding were two different things. Research as to diseases was a matter for a public department, but plant-breeding was a very different thing. He was glad to hear Dr Douglas suggest that it might be some years before the public would get results. They must purify their stocks, and that took years of work. Plant-breeding meant first building up their present stocks of grain, potatoes, roots, and grasses on pure lines. When they had these pure lines they could set on foot cross-breeding. Without knowing that the parent plants were satisfactory, they could not have satisfactory plant-breeding. If they knew that the station was not to be Government controlled they would go in for it more enthusiastically.

Dr R. B. GREIG, of the Board of Agriculture for Scotland, said he wished to be allowed to remove what appeared to him to be a misapprehension as to the question of controlling a station such as was proposed. Dr Douglas and Mr Shields would bear him out when he said that there had not been any suggestion that the station should be controlled by the Board of Agriculture. It was far more important that it should be a national institution, such as had been described by Dr Douglas, than an annexe of the Board of Agriculture. This was much more a national business than a departmental one. It was of national importance, in order to produce what was required for the benefit of the people as well as for the benefit of the farmer, but it was of the first importance that the farmer in Scotland should have a personal definite link and interest in the proposal. Of course, he must very slightly modify the statement that the Board desired to have no control of this institution, because if the Board gave a proportion of the funds it was entitled to representation in proportion to these funds; but that was the only way in which there should be any kind of control by the Board of Agriculture, which was sufficiently weighted with burdens just now, and was glad to be relieved of some of them.

The Highland and Agricultural Society had relieved the Board of Agriculture from experimenting on drainage machines. They would be equally glad (he was speaking for Sir Robert Wright and himself and with the support of the Secretary for Scotland) to give the same support and encouragement to any scheme for the exploitation and improvement of agriculture.

The motion was unanimously agreed to.

Mr JAMES GARDNER (South Hillington), representing the Central Executive of the National Farmers' Union of Scotland, moved the following motion:—

"That a Committee be formed to confer with the Board of Agriculture regarding the establishment of the proposed Station, and to take the necessary steps to obtain public support; and that this Committee consist of ten members appointed by the Directors of the Highland and Agricultural Society, ten appointed by the Directors of the Scottish Chamber of Agriculture, ten by the Central Executive of the National Farmers' Union of Scotland, ten by the Executive Committee of the Scottish Seed Trade Association, and one from each of the following:—

Glasgow and West of Scotland Potato Trade Association,
Edinburgh and East of Scotland do.,
Perth and District do.,
Corn Millers' Association,
The Ayrshire and West of Scotland Wholesale Ryegrass Machiners' Association,
The National Association of Corn and Agricultural Merchants,—

the Committee to have power to co-opt additional members."

He said that so far as the discussion had gone, he thought that the general body of farmers present at the Conference had given their approval to the scheme in an unmistakable manner. His object in attending the Conference was to see that each of the Agricultural Societies of Scotland had fair representation, and from what had been said that representation had been assured. That was a most hopeful day for Scotland and Agriculture; he regarded it as a red-letter day in the history of agriculture in Scotland. He agreed with Dr Douglas that in the matter of research and in a lesser degree plant-breeding there must be no hindrance to the men who carried out the research work. He agreed that it was a most important matter that the

research station should be national in its scope; it was for the nation first and foremost, and then for the members of the community interested in it personally.

Mr DAVID BELL, President of the Scottish Seed Trade Association, seconded the motion. He said the Scottish seed trade had always taken an honourable and foremost place in introducing new and improved plants in this and other countries; but from what he knew of what had been done in other countries, particularly in Sweden and Denmark, he was convinced that something more was now wanted than individual effort, and that they wanted such a plant-breeding and research station where the officials would devote their whole time to the introduction of new and improved varieties of plants. It had been said that a man who made two blades of grass grow where only one had grown before was a public benefactor, but the man who improved our crops would not only help the agriculture of Scotland, but be a great national benefactor. He was so convinced in his own mind of the good that this station would do for Scotland that he was willing to give £1000 towards it, and he was not doing this from philanthropic motives. As a business man he considered it to be a good investment, seeing that his business was bound up with agriculture.

The Board of Agriculture had done well by taking two steps in the right direction—setting up a seed-testing station and plant registration station which would help individuals who introduced new plants to register them and get the benefit of their industry. He had intended to make it a condition of his donation that the station should be in the hands of business men in the agricultural industry of Scotland, but after what Dr Greig had said he need not do so. They of course welcomed the Board of Agriculture to take its part in the work. The principal thing was the provision of funds, and the men who derived the most benefit would be the farmers of Scotland, and he suggested that a voluntary assessment should be imposed on the farmers in the various districts, just as the Highland and Agricultural Society did when its Shows visited the different districts of the country. A voluntary assessment of one shilling an acre would bring in over £100,000, and what was one shilling an acre to the farmers of Scotland to-day? It was the best investment they could make. The station should be independent and free of Government assistance, and it should be a Scottish station. Cambridge had been gathering up funds for a station, and had been approaching many Scotsmen for subscriptions. He did not wish to go hat in hand to England for subscriptions. He hoped they would be more independent, and he saw no reason why they should not raise from £100,000 to £150,000. It would then be the best research station in the world. Scotland had always taken a foremost place in such matters.

The CHAIRMAN said it had been pointed out to him that this motion, as drafted, did not refer to the first meeting of the Committee which was being set up, and he proposed that Mr Stirton be authorised to convene that meeting.

This was agreed to, and the second motion was unanimously adopted.

Sir A. BUCHAN HEPBURN, of Smeaton, Bart., moved a hearty vote of thanks to Mr Munro for attending the Conference and for presiding. In the course of his life he had come across many Secretaries for Scotland, some good, some indifferent, and, he regretted to say, some bad; but those present would agree with him that the present Secretary for Scotland ranked pre-eminently in the first category. From him they had received, not only from the agricultural but from other points of view, the most hearty and sympathetic treatment. He was always ready to meet them as far as he could. He was glad that Mr Munro had made a statement to them as to the support which the Board of Agriculture was to give them—a statement which not only evinced goodwill but took the wind out of the sails of those who were ready to argue and to ask the Government for money. The arrangement to give a like sum to that collected in the districts showed the trouble Mr Munro had taken to carry out the views that had been brought before him in regard to the proposed research station. They should also thank Mr Munro for what he had said as to the support the Government was going to give.

The CHAIRMAN said he thanked Sir Archibald Buchan Hepburn and the other members of that Conference for their kindness that afternoon. He knew they were all busy men, and he claimed to fall within that category also, and he contented himself with just thanking them for the kind reception they had given him. It was always a pleasure to him to meet representatives of agriculture, and to do all in his power to further their interest.

APPENDIX.

PREMIUMS

OFFERED BY

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND IN 1919

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GENERAL NOTICE.

THE HIGHLAND SOCIETY was instituted in the year 1784, and incorporated by Royal Charter in 1787. Its operation was at first limited to matters connected with the improvement of the Highlands of Scotland; but the supervision of certain departments, proper to that part of the country, having been subsequently committed to special Boards of Management, several of the earlier objects contemplated by the Society were abandoned, while the progress of agriculture led to the adoption of others of a more general character. The exertions of the Society were thus early extended to the whole of Scotland, and have since been continuously directed to the promotion of the science and practice of agriculture in all its branches.

In accordance with this more enlarged sphere of action, the original title of the Society was altered, under a Royal Charter, in 1834, to THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

Among the more important measures which have been effected by the Society are—

1. Agricultural Meetings and General Shows of Stock, Implements, &c., held in the principal towns of Scotland, at which exhibitors from all parts of the United Kingdom are allowed to compete.

2. A system of District Shows instituted for the purpose of improving the breeds of Stock most suitable for different parts of the country, and of aiding and directing the efforts of Local Agricultural Associations.

3. The encouragement of Agricultural Education, under powers conferred by a supplementary Royal Charter, granted in 1856, and authorising the Society to grant Diplomas to Students of Agriculture; and by giving grants in aid of education in Agriculture and allied sciences. In 1900 the Society discontinued its own Examination, and instituted jointly with the Royal Agricultural Society of England an Examination for a National Diploma in Agriculture.

4. The advancement of the Veterinary Art, by conferring Certificates on Students who have passed through a prescribed curriculum, and who are found, by public examination, qualified to practise. Terminated in 1881 in accordance with arrangements with the Royal College of Veterinary Surgeons.

5. The institution of a National Examination in Dairying, jointly with the Royal Agricultural Society of England.

6. The institution of an Examination in Forestry for First and Second Class Certificates.

7. The appointment of a chemist for the purpose of promoting the application of science to agriculture.

8. The establishment of a Botanical Department.

9. The appointment of Entomologist to advise members regarding insect pests.

10. The annual publication of the 'Transactions,' comprehending papers by selected writers, Prize Reports, and reports of experiments, also an abstract of the business at Board and General Meetings, and other communications.

11. The management of a fund left by John, 5th Duke of Argyll (the original President of the Society), to assist young natives of the Highlands who enter His Majesty's Navy.

CONSTITUTION AND MANAGEMENT.

The general business of THE HIGHLAND AND AGRICULTURAL SOCIETY is conducted under the sanction and control of the Royal Charters, referred to above, which authorise the enactment of Bye-Laws.

The Office-Bearers consist of a President, Four Vice-Presidents, Thirty-two Ordinary and Twenty Extraordinary Directors, a Treasurer, an Honorary and an Acting Secretary, an Auditor, and other Officers.

The Supplementary Charter of 1856 provides for the appointment of a Council on Education, consisting of Sixteen Members — Nine nominated by the Charter, and Seven elected by the Society.

PRIVILEGES OF MEMBERS

MEMBERS OF THE SOCIETY ARE ENTITLED—

1. *To receive a free copy of the 'Transactions' annually.*
2. *To apply for District Premiums that may be offered.*
3. *To report Ploughing Matches for Medals that may be offered.*
4. *To Free Admission to the Shows of the Society.*
5. *To exhibit Live Stock and Implements at reduced rates.*[1]
6. *To have Manures and Feeding-Stuffs analysed at reduced fees.*
7. *To have Seeds tested at reduced fees.*
8. *To have Insect Pests and Diseases affecting Farm Crops inquired into.*
9. *To attend and vote at General Meetings of the Society.*
10. *To vote for the Election of Directors, &c., &c.*

ANALYSIS OF MANURES AND FEEDING-STUFFS

The Fees of the Society's Chemist for Analyses made for Members of the Society shall, until further notice, be as follow :—

The estimation of *one* ingredient in a manure or feeding-stuff . . . . 5s.
The estimation of *two or more* ingredients in a manure or feeding-stuff . . . 10s.

These charges apply only to analyses made for the sole and private use o Members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

The Society's Chemist, if requested, also supplies valuations of manures, according to the Society's scale of units.

SEEDS, CROP DISEASES, INSECT PESTS, &c.

The rates of charges for the examination of plants and seeds, crop diseases, insect pests, &c., will be had on application to the Secretary.

ELECTION OF MEMBERS

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January and June. It is not necessary that the proposer should attend the Meeting.

CONDITIONS OF MEMBERSHIP

Higher Subscription.—The ordinary annual subscription is £1, 3s. 6d., and the ordinary subscription for life-membership is £12, 12s.; or after ten annual payments have been made, £7, 7s.

Lower Subscription.—Proprietors farming the whole of their own lands, whose rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, and such other persons as, in respect of their official or other connection with Agriculture, the Board of Directors may consider eligible, are admitted on a subscription of 10s. annually, which may be redeemed by one payment of £7, 7s., and after eight annual payments of 10s. have been made, a Life Subscription may be purchased for £5, 5s., and after twelve such payments, for £3, 3s.[2] Subscriptions are payable on election, and afterwards annually in January.

Members are requested to send to the Secretary the names and addresses of Candidates they have to propose (stating whether the Candidates should be on the £1, 3s. 6d. or 10s. list).

JOHN STIRTON, *Secretary.*

3 GEORGE IV. BRIDGE, EDINBURGH.

[1] Firms are not admitted as Members; but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.

[2] Candidates claiming to be on the 10s. list must state under which of the above designations they are entitled to be placed on it.

ESTABLISHMENT FOR 1918-1919.

President.

THE EARL OF ROSEBERY, K.G., K.T., Dalmeny House, Edinburgh.

Vice-Presidents.

The MARQUIS OF LINLITHGOW, Hopetoun House, South Queensferry.
Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Letham, Haddington.
The Right Hon. Sir JOHN LORNE MACLEOD, Lord Provost of Edinburgh. 72 Great King Street.
Colonel WARDLAW RAMSAY of Whitehill, Rosewell.

Ordinary Directors.

Year of Election.	
1915	JAMES ELDER, Athelstaneford Mains, Drem.
	JOHN P. SLEIGH, St John's Wells, Fyvie.
	WILLIAM CARRICK, The Baad, Stirling.
	MURRAY LITTLE, Summerhill, Annan.
	P. B. MACINTYRE, Findon Mains, Conon Bridge.
	WILLIAM MUNGALL of Transy, Dunfermline.
	Major W. T. R. HOULDSWORTH, Kirkbride, Maybole.
	SAMUEL STRANG STEEL of Philiphaugh, M.P., Selkirk.
1916	General ARCHIBALD STIRLING of Keir, Dunblane.
	Lieut.-Col. F. J. CARRUTHERS of Dormont, Lockerbie.
	LORD LOVAT, C.B., D.S.O., &c., Beaufort Castle, Beauly.
	HUGH MARTIN, Flowerdale, Kinrossie, Perth.
	DUNCAN M. WALLACE, Paton Street, Glasgow.
	JOHN ELLIOT, Meigle, Clovenfords.
	ROBERT PARK, Brunstane, Portobello.
1917	W. A. DRON, Crieffvechter, Crieff. (Jan. 1919.)
	JOHN M'CAIG of Belmont, Stranraer.
	JOHN C. ROBERTSON, Fodderty, Dingwall.
	LORD FORTEVIOT, Dupplin Castle, Perth.
	CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, Lesmahagow.
	MOFFAT S. THOMSON of Lambden, Spotsmains, Kelso.
	ALEXANDER COWAN, Valleyfield, Penicuik.
	ALEXANDER FORBES, Rettie, Banff.
1918	ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
	Sir KENNETH MACKENZIE of Gairloch, Bart., 10 Moray Pl., Edinburgh.
	DAVID FERRIE of Parbroath, Cupar-Fife.
	WILLIAM DONALD, Fardalehill, Kilmarnock.
	ROBERT DICKINSON, Longcroft, Oxton.
	PHIPPS O. TURNBULL, Smeaton, Dalkeith.
	Colonel J. L. REID of Cromley Bank, Ellon.
	J. ERNEST KERR of Harviestoun Castle, Dollar.

Extraordinary Directors.

1917
- A. B. Leitch, Inchstelly, Alves, Forres.
- Peter M'Intyre, Tighnablair, Comrie.
- Maclachlan of Maclachlan, Castle Lachlan, Strachur.
- Sir Hugh Shaw Stewart, Bart., C.B., of Greenock and Blackhall, Ardgowan, Greenock.

1918
- George W. Constable, Traquair Estate Office, Innerleithen.
- John Elder, Tweedside Implement Works, Berwick-on-Tweed. (Jan. 1919.)
- William Elliot, Muirglen, Lanark.
- A. F. Irvine of Drum, Drumoak.
- James M'Queen of Crofts, Dalbeattie.
- R. D. Thom of Pitlochie, Gateside, Fife.

Show District.

1918
- James Allison, Redheughs, Corstorphine.
- Archibald Cochrane, Trinlaymire, Linlithgow.
- J. Inglis Davidson, Saughton Mains, Corstorphine.
- Sir Henry Dundas, Bart., M.V.O., Polton House, Lasswade.
- Thomas Elder of Stevenson, Haddington.
- Thomas Kirk of Abbey Mains, Haddington.
- J. T. M'Laren, The Leuchold, Dalmeny House, Edinburgh.
- George Pendreigh, Upper Dalhousie, Bonnyrigg. (Jan. 1919.)
- G. Bertram Shields, Dolphingstone, Tranent.
- Sir J. Stewart-Clark, Bart., of Dundas Castle, South Queensferry.

Office-Bearers.

David Wilson, D.Sc., of Carbeth, Killearn, *Treasurer.*
Alex. Cross of Knockdon, 19 Hope Street, Glasgow, *Honorary Secretary.*
Rev. A. Wallace Williamson, D.D., 44 Palmerston Place, *Chaplain.*
John Stirton, *Secretary.*
Edward M. Cowie, *Chief Clerk and Cashier.*
A. S. Cavers, *Second Clerk.*
William Home Cook, C.A., 42 Castle Street, *Auditor.*
J. F. Tocher, D.Sc., F.I.C., 41½ Union Street, Aberdeen, *Chemist.*
Professor R. Stanfield, A.R.S.M., M.Inst.C.E., F.R.S.E., 24 Mayfield Gardens, Edinburgh, *Consulting Engineer.*
A. N. M'Alpine, 6 Blythswood Square, Glasgow, *Consulting Botanist.*
R. S. MacDougall, M.A., D.Sc., 9 Dryden Place, *Consulting Entomologist.*
Tods, Murray, & Jamieson, W.S., 66 Queen Street, *Law Agents.*
William Blackwood & Sons, 45 George Street, *Publishers.*
Henry Munro, Ltd., 82 Mitchell Street, Glasgow, *Advertising Agents.*
Hamilton & Inches, Princes Street, *Silversmiths.*
Alexander Kirkwood & Son, 9 St James' Square, *Medallists.*
D. Macandrew & Co., 120 Loch Street, Aberdeen, *Showyard Contractors.*
Andrew Brown, *Messenger.*

Chairman of Board of Directors.

CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, Lesmahagow.

Chairmen of Committees.

1. *Argyll Naval Fund* . . Colonel John Gilmour, M.P., D.S.O.
2. *Finance, Chambers, and Law* David Wilson, D.Sc., of Carbeth.
3. *Publications* . . . Charles Douglas, D.Sc., C.B., of Auchlochan.
4. *Shows* . . . . J. T. M'Laren, The Leuchold, Dalmeny.
5. *Implements and Machinery* Phipps O. Turnbull, Smeaton.
6. *Science* . . . . David Wilson, D.Sc., of Carbeth.
7. *General Purposes* . . Charles Douglas, D.Sc., C.B., of Auchlochan.
8. *Education* . . . . Alexander Cross of Knockdon.
9. *Forestry* . . . . Sir Archibald Buchan Hepburn, Bart.

COMMITTEES FOR 1918-1919.

1. ARGYLL NAVAL FUND.

Colonel JOHN GILMOUR, M.P., D.S.O., yr. of Montrave, Leven, *Convener.*
Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Haddington.
Sir KENNETH MACKENZIE of Gairloch, Bart., 10 Moray Place, Edinburgh.
MACLACHLAN OF MACLACHLAN, Castle Lachlan, Strachur.
ALEXANDER CROSS of Knockdon, 19 Hope Street, Glasgow.
DAVID WILSON, D.Sc., of Carbeth, Killearn.
CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, Lesmahagow.

2. FINANCE, CHAMBERS, AND LAW.

DAVID WILSON, D.Sc., of Carbeth, Killearn, *Convener.*
ALEXANDER CROSS of Knockdon, 19 Hope Street, Glasgow, *Vice-Convener.*
ALEXANDER COWAN, Valleyfield, Penicuik.
JAS. I. DAVIDSON, Saughton Mains, Corstorphine.
JAMES ELDER, Athelstaneford Mains, Drem.
WILLIAM ELLIOT, Muirglen, Lanark.
DAVID FERRIE of Parbroath, Cupar-Fife.
Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Haddington.
PETER M'INTYRE, Tighnablair, Comrie.
J. T. M'LAREN, The Leuchold, Dalmeny House, Edinburgh.
ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, Lesmahagow, Chairman, *ex officio*
WILLIAM HOME COOK, C.A., Auditor, *ex officio.*

3. PUBLICATIONS.

CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, Lesmahagow, *Convener.*
JAMES ELDER, Athelstaneford Mains, Drem.
Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Haddington.
MURRAY LITTLE, Summerhill, Annan.
PETER M'INTYRE, Tighnablair, Comrie.
ROBERT MACMILLAN of Holm of Dalquhairn, Woodlea, Moniaive.
G. BERTRAM SHIELDS, Dolphingstone, Tranent.
Sir HUGH SHAW STEWART, Bart., C.B., of Greenock and Blackhall, Ardgowan, Greenock.
R. D. THOM of Pitlochie, Gateside.
DAVID WILSON, D.Sc., of Carbeth, Killearn.
ALEXANDER CROSS of Knockdon, Hon. Secretary, *ex officio.*

4. SHOWS.

J. T. M'LAREN, The Leuchold, Dalmeny House, *Convener.*
G. BERTRAM SHIELDS, Dolphingstone, Tranent, *Vice-Convener.*
JAMES ALLISON, Redheughs, Corstorphine.
WILLIAM CARRICK, The Baad, Stirling.
Lieut.-Col. F. J. CARRUTHERS of Dormont, Lockerbie.
Sir J. STEWART-CLARK, Bart., of Dundas Castle, South Queensferry.
ARCHIBALD COCHRANE, Trinlaymire, Linlithgow.
GEORGE W. CONSTABLE, Traquair Estate Office, Innerleithen.
ALEXANDER COWAN, Valleyfield, Penicuik.

James I. Davidson, Saughton Mains, Corstorphine.
Robert Dickinson, Longcroft, Oxton.
William Donald, Fardalehill, Kilmarnock.
Sir Henry Dundas, Bart., M.V.O., Polton House, Lasswade.
Thomas Elder of Stevenson, Haddington.
John Elliot, Meigle, Galashiels.
William Elliot, Muirglen, Lanark.
David Ferrie of Parbroath, Cupar-Fife.
Alexander Forbes, Rettie, Banff.
Lord Forteviot, Dupplin Castle, Perth.
Sir Archibald Buchan Hepburn of Smeaton, Bart., Haddington.
J. Ernest Kerr of Harviestoun Castle, Dollar.
Thomas Kirk of Abbey Mains, Haddington.
A. B. Leitch, Inchstelly, Alves, Forres.
Lord Lovat, C.B., D.S.O., &c., Beaufort Castle, Beauly.
John M'Caig of Belmont, Stranraer.
Peter M'Intyre, Tighnablair, Comrie.
P. B. Macintyre, Mains of Findon, Conon Bridge.
Sir Kenneth Mackenzie of Gairloch, Bart., 10 Moray Place.
Robert MacMillan of Holm of Dalquhairn, Woodlea, Moniaive.
James M'Queen of Crofts, Dalbeattie.
Hugh Martin, Flowerdale, Kinrossie, Perth.
William Mungall of Transy, Dunfermline.
Robert Park, Brunstane, Portobello.
Colonel J. L. Reid of Cromley Bank, Ellon.
John C. Robertson, Fodderty, Dingwall.
John P. Sleigh, St John's Wells, Fyvie.
Samuel Strang Steel of Philiphaugh, M.P., Selkirk.
Sir Hugh Shaw Stewart of Greenock and Blackhall, Bart., C.B., Ardgowan.
General Archibald Stirling of Keir, Dunblane.
R. D. Thom of Pitlochie, Gateside, Fife.
Moffat S. Thomson of Lambden, Spotsmains, Kelso.
Phipps O. Turnbull, Smeaton, Dalkeith.
Duncan M. Wallace, Paton Street, Glasgow.
David Wilson, D.Sc., of Carbeth, Killearn, Treasurer, *ex officio*.
Alexander Cross of Knockdon, Hon. Secretary, *ex officio*.
Charles Douglas, D.Sc., C.B., of Auchlochan, Lesmahagow, Chairman, *ex officio*.
Professor R. Stanfield, 24 Mayfield Gardens, Edinburgh, Engineer, *ex officio*.

5. IMPLEMENTS AND MACHINERY.

Phipps O. Turnbull, Smeaton, Dalkeith, *Convener*.
George W. Constable, Traquair Estate Office, Innerleithen.
Sir Henry Dundas, Bart., M.V.O., Polton House, Lasswade.
James Elder, Athelstaneford Mains, Drem.
Thomas Elder of Stevenson, Haddington.
John Elliot, Meigle, Clovenfords.
William Elliot, Muirglen, Lanark.
David Ferrie of Parbroath, Cupar-Fife.
Thomas Kirk of Abbey Mains, Haddington.
A. B. Leitch, Inchstelly, Alves, Forres.
J. T. M'Laren, The Leuchold, Dalmeny House.
Hugh Martin, Flowerdale, Kinrossie, Perth.
Robert Park, Brunstane, Portobello.
Colonel J. L. Reid of Cromlybank, Ellon.
John C. Robertson, Fodderty, Dingwall.
G. Bertram Shields, Dolphingstone, Tranent.
John P. Sleigh, St John's Wells, Fyvie.
R. D. Thom of Pitlochie, Gateside.
Moffat S. Thomson of Lambden, Spotsmains, Kelso.

Duncan M. Wallace, Paton Street, Glasgow.
Charles Douglas, D.Sc., C.B., of Auchlochan, Lesmahagow, *ex officio.*
David Wilson, D.Sc., of Carbeth, Killearn, *ex officio.*
Alexander Cross of Knockdon, 19 Hope Street, Glasgow, *ex officio.*
Professor Stanfield, 24 Mayfield Gardens, *ex officio.*

6. SCIENCE

David Wilson, D.Sc., of Carbeth, Killearn, *Convener.*
Charles Douglas, D.Sc., C.B., of Auchlochan, Lesmahagow, *Vice-Convener.*
George A. Constable, Traquair Estate Office, Innerleithen.
Alexander Cowan, Valleyfield, Penicuik.
James I. Davidson, Saughton Mains, Corstorphine.
James Elder, Athelstaneford Mains, Drem.
David Ferrie of Parbroath, Cupar-Fife.
Lord Forteviot, Dupplin Castle, Perth.
Sir Archibald Buchan Hepburn of Smeaton, Bart., Haddington.
A. F. Irvine of Drum, Drumoak.
Thomas Kirk of Abbey Mains, Haddington.
Murray Little, Summerhill, Annan.
John M'Caig of Belmont, Stranraer.
J. T. M'Laren, The Leuchold, Dalmeny House.
James M'Queen of Crofts, Dalbeattie.
Hugh Martin, Flowerdale, Kinrossie, Perth.
Robert Park, Brunstane, Portobello.
John C. Robertson, Fodderty, Dingwall.
G. Bertram Shields, Dolphingstone, Tranent.
Sir Hugh Shaw Stewart, Bart., C.B., of Greenock and Blackhall, Ardgowan, Greenock.
R. D. Thom of Pitlochie, Gateside.
Moffat S. Thomson of Lambden, Spotsmains, Kelso.
Phipps O. Turnbull, Smeaton, Dalkeith.
Alexander Cross of Knockdon, Hon. Secretary, *ex officio.*
Dr J. F. Tocher, Chemist, *ex officio.*
A. N. M'Alpine, Botanist, *ex officio.*
R. S. MacDougall, D.Sc., Zoologist, *ex officio.*

7. GENERAL PURPOSES.

Charles Douglas, D.Sc., C.B., of Auchlochan, Lesmahagow, *Convener.*
George W. Constable, Traquair Estate Office, Innerleithen.
Alexander Cowan, Valleyfield, Penicuik.
James Elder, Athelstaneford Mains, Drem.
Thomas Elder of Stevenson, Haddington.
Sir Archibald Buchan Hepburn of Smeaton, Bart., Haddington.
J. T. M'Laren, The Leuchold, Dalmeny House.
Robert MacMillan of Holm of Dalquhairn, Woodlea, Moniaive.
James M'Queen of Crofts, Dalbeattie.
Robert Park, Brunstane, Portobello.
G. Bertram Shields, Dolphingstone, Tranent.
Sir Hugh Shaw Stewart, Bart., C.B., of Greenock and Blackhall, Ardgowan.
Phipps O. Turnbull, Smeaton, Dalkeith.
David Wilson, D.Sc., of Carbeth, Killearn, Treasurer, *ex officio.*
Alexander Cross of Knockdon, Hon. Secretary, *ex officio.*

8. EDUCATION.

Alexander Cross of Knockdon, 19 Hope Street, Glasgow, *Convener.*
Charles Douglas, D.Sc., C.B., of Auchlochan, Lesmahagow.
Sir Archibald Buchan Hepburn of Smeaton, Bart., Haddington.
David Wilson, D.Sc., of Carbeth, Killearn.
John Stirton, *Secretary*, Highland and Agricultural Society.

9. FORESTRY.

Sir Archibald Buchan Hepburn of Smeaton, Bart., Haddington, *Convener.*
A. H. Anderson, Kippendavie, Dunblane.
James I. Davidson, Saughton Mains, Corstorphine.
Charles Douglas, D.Sc., C.B., of Auchlochan, Lesmahagow.
Sir Henry Dundas, Bart., M.V.O., Polton House, Lasswade.
Lord Dunglass, Springhill, Coldstream.
Sir John R. Findlay of Aberlour, 27 Drumsheugh Gardens, Edinburgh.
Lord Forteviot, Dupplin Castle, Perth.
Colonel John Gilmour, M.P., yr. of Montrave, Leven.
J. H. Milne Home, Irvine House, Canonbie.
David Keir, Ladywell, Dunkeld.
Lord Lovat, C.B., D.S.O., &c., Beaufort Castle, Beauly.
A. D. Macdonald, Yester Estates Office, Gifford.
Sir Kenneth Mackenzie of Gairloch, Bart., 10 Moray Place.
Maclachlan of Maclachlan, Castle Lachlan, Strachur.
Right Hon. Sir Herbert E. Maxwell of Monreith, Bart., Whauphill.
Sir Hugh Shaw Stewart, Bart., C.B., of Greenock and Blackhall, Ardgowan.
Sir John Stirling Maxwell of Pollok, Bart., Pollokshaws.
John Michie, M.V.O., Balmoral, Ballater.
The Master of Polwarth, Humbie House, Upper Keith.
Colonel Archibald Stirling of Keir, Dunblane.
David Wilson, D.Sc., of Carbeth, Killearn.

10. OFFICE-BEARERS.

Constitution: (1) The four Ordinary Directors for the district in which the Show for the year is to be held (with the exception of one retiring next year); (2) one Ordinary Director from each of the other Show districts; and (3) the Chairman of the Board, Hon. Secretary, and Treasurer, *ex officiis.*

Aberdeen { Alexander Forbes, Rettie, Banff.
Colonel J. L. Reid of Cromley Bank, Ellon.
Stirling . J. Ernest Kerr of Harviestoun Castle, Dollar.
Dumfries . John M'Caig of Belmont, Stranraer.
Inverness . John C. Robertson, Fodderty, Dingwall.
Perth . Hugh Martin, Flowerdale, Kinrossie, Perth.
Glasgow . Duncan M. Wallace, Paton Street, Glasgow.
Borders . John Elliot, Meigle, Clovenfords.
Edinburgh Robert Park, Brunstane, Portobello.

Charles Douglas, D.Sc., C.B., of Auchlochan, Chairman, *ex officio.*
Alexander Cross of Knockdon, Hon. Secretary, *ex officio.*
David Wilson, D.Sc., of Carbeth, Killearn, Treasurer, *ex officio.*

LAW AND PARLIAMENTARY.

Glasgow . William Elliot, Muirglen, Lanark.
Perth . R. D. Thom of Pitlochie, Gateside.
Stirling . Peter M'Intyre, Tighnablair, Comrie.
Edinburgh. James Elder, Athelstaneford Mains, Drem.
Aberdeen . John P. Sleigh, St John's Wells, Fyvie.
Dumfries . John M'Caig of Belmont, Stranraer.
Inverness . John C. Robertson, Fodderty, Dingwall.
Border . George W. Constable, Traquair Estate Office, Innerleithen.

Lord Forteviot, Dupplin Castle, Perth.
Sir Archibald Buchan Hepburn of Smeaton, Letham, Haddington.
Sir Hugh Shaw Stewart of Greenock and Ardgowan, Bart., C.B.
Murray Little, Summerhill, Annan.
Charles Douglas, D.Sc., C.B., of Auchlochan, Lesmahagow, *Chairman.*
David Wilson, D.Sc., of Carbeth, Killearn, *Treasurer, ex officio.*
Alexander Cross of Knockdon, 19 Hope Street, Glasgow, *Hon. Secretary, ex officio.*

REPRESENTATIVES ON OTHER BODIES.

National Agricultural Examination Board.

CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, Lesmahagow, *Chairman.*
ALEXANDER CROSS of Knockdon, 19 Hope Street, Glasgow.
Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Haddington.
DAVID WILSON, D.Sc., of Carbeth, Killearn.
JOHN STIRTON, *Secretary*, Highland and Agricultural Society.

Scottish Council of Agriculture.

CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, Lesmahagow.
DAVID WILSON, D.Sc., of Carbeth, Killearn.
G. BERTRAM SHIELDS, Dolphingstone, Tranent.
JOHN STIRTON, *Secretary*, Highland and Agricultural Society.

Board of Scientific Societies.

CHARLES DOUGLAS, D.Sc., C.B., of Auchlochan, Lesmahagow.

Edinburgh and East of Scotland College of Agriculture.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Haddington.
PHIPPS O. TURNBULL, Smeaton, Dalkeith.

West of Scotland Agricultural College.

Sir HUGH SHAW STEWART, Bart., C.B., of Ardgowan and Blackhall, Ardgowan, Greenock.
JOHN M'CAIG of Belmont, Stranraer.

Aberdeen and North of Scotland College of Agriculture.

WILLIAM DUTHIE, Tarves.
Dr J. F. TOCHER, 41½ Union Street, Aberdeen.

Royal (Dick) Veterinary College.

Sir ARCHIBALD BUCHAN HEPBURN of Smeaton, Bart., Letham, Haddington.

Glasgow Veterinary College.

ALEXANDER CROSS of Knockdon, 19 Hope Street, Glasgow.

Scottish Milk Records Association.

ALEXANDER CROSS of Knockdon, 19 Hope Street, Glasgow.
JOHN M'CAIG of Belmont, Stranraer.
Sir HUGH SHAW STEWART, Bart., C.B., of Greenock and Blackhall.

MEETINGS.

General Meetings.—By the Charter the Society must hold two General Meetings each year, and, under ordinary circumstances, they are held in the months of January and June, in the Society's Hall, 3 George IV. Bridge, for the election of Members and other business. Twenty a quorum.

By a resolution of the General Meeting on 15th January 1879, a General Meeting of Members is held in the Showyard on the occasion of the Annual Show. This year no meeting will be held, on account of the decision of the Directors not to proceed with the Show.

With reference to motions at General Meetings, Bye-Law No. 10 pro-

vides—"That at General Meetings of the Society no motion or proposal (except of mere form or courtesy) shall be submitted or entertained for immediate decision unless notice thereof has been given a week previously to the Board of Directors, without prejudice, however, to the competency of making such motion or proposal to the effect of its being remitted to the Directors for consideration, and thereafter being disposed of at a future General Meeting."

General Show at Edinburgh—8th, 9th, 10th, and 11th July.—Entries close for Implements, 5th May; Stock, Poultry, Dairy Produce, &c., 29th May.

Directors' Meetings.—The Board of Directors meet (except when otherwise arranged) on the first Wednesday of each month from November till June inclusive, at half-past one o'clock P.M., and occasionally as business may require, on a requisition by three Directors to the Secretary, or on intimation by him. Seven a quorum.

Committee Meetings.—Meetings of the various Committees are held as required.

Nomination of Directors.—Meetings of Members, for the purpose of nominating Directors to represent the Show Divisions on the Board for the year 1920-1921, will be held at the places and on the days after mentioned:—

1. Edinburgh, Market Buildings, Gorgie,	Wed., 28th Jan. 1920, at 2.
2. Perth, Salutation Hotel, . . .	Tues., 17th Feb. 1920, at 2.
(*In* 1921 *the Meeting will be held at Perth, in* 1922 *and* 1923 *at Cupar.*)	
3. Glasgow, North British Railway Hotel,	Wed., 18th Feb. 1920, at 1.
4. Stirling, Golden Lion Hotel, . .	Thur., 19th Feb. 1920, at 1.30.
5. Border, Railway Hotel, St Boswells, .	Thur., 26th Feb. 1920, at 1.
6. Aberdeen, Imperial Hotel, . . .	Fri., 27th Feb. 1920, at 2.30.
7. Inverness, Station Hotel, . . .	Tues., 2nd Mar. 1920, at 12.30.
8. Dumfries, King's Arms Hotel, . .	Wed., 10th Mar. 1920, at 1.30.

The nomination of Proprietor or other Members paying the higher subscription must be made in the 4th, 6th, 7th, and 8th Divisions; and the nomination of Tenant-Farmer or other Members paying the lower subscription, in the 1st, 2nd, 3rd, and 5th Divisions.

Retiring Directors are not eligible for re-election until after the lapse of at least one year.

EXAMINATIONS.

Agriculture.—The Examination for 1919 for the National Diploma in Agriculture will be held at the University, Leeds, on Saturday, 26th April, and following days. Entries close on 1st March.

Dairy.—The Examination for 1919 for the National Diploma in Dairying will be held at the Dairy School, Kilmarnock, on Friday, 19th September, and following days. Entries close on 15th August.

Forestry.—The Examination for the Society's Certificates in Forestry will be held at 3 George IV. Bridge, Edinburgh, on 25th, 26th, and 27th March 1919. Entries close on 24th February.

AGRICULTURAL EDUCATION

By a Supplementary Charter under the Great Seal, granted in 1856, the Society is empowered to grant Diplomas.

From 1858 to 1899 the Society held an annual Examination for Certificate and Diploma in Agriculture. In 1872 the Free Life Membership of the Society was granted to winners of the Diploma. In 1884 permission was given to holders of the Diploma to append the letters F.H.A.S. to their names.

In 1898 it was resolved by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland to discontinue the independent Examinations in Agriculture held by the two Societies, and to institute in their stead a Joint-Examination for a NATIONAL DIPLOMA IN AGRICULTURE (N.D.A.) This Examination is now conducted under the management of the "National Agricultural Examination Board" appointed by the two Societies. In the year 1903, on the invitation of the two Societies, the Board of Agriculture and the Scotch Education Department agreed to appoint a representative from each to act on the Examination Board. Professor Middleton, C.B., represents the former, and Sir John Struthers, K.C.B., LL.D., the latter body.

REGULATIONS FOR EXAMINATION IN THE SCIENCE AND PRACTICE OF AGRICULTURE

1. The Societies may hold conjointly, under the management of the National Agricultural Examination Board appointed by them, an Annual Examination in the Science and Practice of Agriculture, at a convenient centre.

2. Candidates who pass the Examination will receive the National Diploma in Agriculture—the Diploma to be distinguished shortly by the letters "N.D.A."

3. The Examination will be conducted by means of written papers and oral Examinations.

4. In order to be eligible to sit for the Board's Examination in Agriculture, a Candidate must—

(*a*) Present a certificate from a recognised Agricultural College that his attainments in the subjects of *General Botany*, *Geology*, *General Chemistry*, *Physics and Mechanics*, as attested by class and other examinations, are, in the opinion of the authorities of the College, such as to justify his admission to the Board's Examination ; *or*

(*b*) Produce evidence that he has passed the 1st B.Sc. or the Intermediate Examination in Science of a British University ; *or*

(*c*) Present a Senior Certificate obtained at the Local Examinations of the Universities of Oxford or Cambridge, and produce evidence that he has continued his study of science for at least a year, and has obtained a certificate in subject 3 (*a*) Elementary Chemistry and Physics, (*b*) Botany of Group H of the Oxford Higher Local Examination, *or* in Subjects 1, Elementary Chemistry and Physics, and 4, Botany of Group E of the Cambridge Higher Local Examination ; *or*

(*d*) Present an Intermediate Leaving Certificate of the Scottish Education Department, and produce evidence that he has continued his studies for at least another year and has obtained the Higher Leaving Certificate in Science (including Chemistry and Botany).

5. In the case of students who satisfy the Board that they have not had the facilities for obtaining the foregoing certificates, the Board will be prepared to consider evidence of equivalent attainment.

6. Candidates will have the option of taking the whole of the following eight papers at one time, or of sitting for a group of any three or four in one year and the remaining group of four or five in the next year.

Subject.	Maximum Marks.	Pass Marks.
1. Practical Agriculture (First Paper)	300	180
2. Practical Agriculture (Second Paper)	300	180
3. Farm and Estate Engineering—		
(*a*) Surveying and Farm Buildings	150	75
(*b*) Machinery and Implements	150	75
4. Agricultural Chemistry	300	150
5. Agricultural Botany	300	150
6. Agricultural Book-keeping	200	100
7. Agricultural Zoology	200	100
8. Veterinary Science	200	100
	2100	1110

7. A Candidate who obtains not less than three-fourths (1575) of the aggregate maximum marks (2100) in the entire Examination will receive the Diploma with Honours, provided that he obtains not less than three-fourths (450) of the maximum marks (600) in the two Practical Agriculture papers.

8. Candidates electing to take the entire Examination at one time and failing in not more than two subjects may appear for these subjects in the following year. Failure in more than two subjects will be regarded as failure in the whole Examination.

9. Candidates electing to take the Examination papers in two groups and failing in a single subject may appear for that subject in the following year. Failure in more than one subject will be regarded as failure in the group.

10. Non-returnable fees must be paid by Candidates as follows :—

Entire Examination	Four guineas.
Group of Subjects	Two guineas.
One or two Subjects	One pound.

11. The Board reserve the right to postpone, abandon, or in any way, or at any time, modify an Examination, and also to decline at any stage to admit any particular Candidate to the Examination.

The Examination will take place at the Leeds University on Saturday, April 26, 1919, and days of the following week.

Forms of application for permission to sit at the Examination may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C. 1," or from "The Secretary, Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh," and must be returned duly filled up not later than Saturday, March 1st, 1919, when the Entries will close.

16 Bedford Square, London, W.C. 1,
December 1918.

SYLLABUS OF SUBJECTS OF EXAMINATION

PRACTICAL AGRICULTURE.

I.—First Paper.

1. *British Farming.*—Arable, stock-raising, dairying—Approximate areas covered by the different systems—Typical examples of each—Area in Great Britain under chief crops—Numbers of live stock—The recent history of agriculture—Short summary of agricultural returns.

2. *Climate.*—The effect of climate on farming practice—Rainfall—Temperature—Prevailing winds—Weather forecasts.

3. *Soils.*—The influence of geological formations on the systems of farming—Classification of soils—Character and composition—Suitability for cultivation—Reclamation—Drainage—Irrigation—Warping—Application of lime and marl—Bare fallows—Tillage—Subsoiling—Deep and thorough cultivation.

4. *Manures.*—The manures of the farm—The treatment of farmyard manure—The disposal of liquid manure and sewage—General manures—Special manures—Field trials of manures—The application of manures—Period of application and amounts used per acre—Unexhausted value of manures and feeding-stuffs.

5. *Crops.*—Wheat, barley, oats, rye, beans, peas, potatoes, turnips, swedes, mangolds, forage plants, hops, and other crops—Their adaptation to different soils and climates—Varieties—Selection of seed—Judging seeds—Cultivation, weeds and parasitic plants, best methods of prevention and eradication—Harvesting—Storing—Cost of production—Improvement of crops by selection and hybridising—Field trials—Methods which the farmer may adopt—Selection to resist disease—The principles of rotations—Rotations suitable for different soils and climates—Rotations and the maintenance of fertility—Green manuring—Leguminous crops in rotation—Catch crops—The advantages and disadvantages of rotations—Specialised farming.

II.—Second Paper.

6. *Live Stock.*—The different breeds of British live stock—Their origin, characteristics, and comparative merits—Suitability for different districts—Breeding—General principles—Selection—Mating—Crossing—Rearing and general management—Breeding and rearing of horses, cattle, sheep, pigs and poultry—Rearing colts and raising store stock—The foods of the farm—Their composition and suitability for different classes of stock—Purchased foods—Composition and special value—Rations for different kinds and ages of stock—Cost of producing beef, mutton, pork, and milk—Cost of feeding farm horses.

7. *The disposal of Crop, Produce, and Stock.*—Marketing grain and other crops—Sale of stock—Live weight—Dead weight.

8. *Milk.*—The production and treatment of milk—The manufacture of cheese, butter, &c.—The utilisation of by-products.

9. *Farming Capital.*—Calculations of the stocking and working of arable, stock, and dairy farms—Labour on the farm—Farm valuations—Rent and taxes.

10. *Renting a Farm.*—Indications of condition, productive power, and stock-carrying capacity—Leases—Conditions of occupancy.

N.B.—*It is essential that a Candidate know his subject practically, and that he satisfy the Examiner of his familiarity with farm routine.*

III.—FARM AND ESTATE ENGINEERING.

Note.—In and after the year 1919, *candidates must obtain pass marks separately in subjects* (a) *and* (b), *and these two parts will rank as of equal value.*

(*a*) Surveying and Farm Buildings.

1. The use and adjustment of instruments employed in Surveying and Levelling.

2. Land surveying by chain—Plotting from field book, and determination of areas surveyed—The simpler "field problems."

3. Levelling and plotting from field book.

4. A sufficient knowledge of Trigonometrical Surveying for the determination of heights and distances by Theodolite.

5. A knowledge of the various classes of maps published by the Ordnance Survey Department and their Scales.

6. *Roads and Fences.*—The construction and maintenance of farm roads, fences, and ditches.

7. *Land Drainage.*—Objects and methods of draining; mole and pipe drains; construction and maintenance of cost of drains.

8. *Buildings.*—Buildings required on different classes of farms—Economical arrangement of farm buildings—Materials—Construction—Ventilation—Drainage—Water supply—Dimensions of dairy, stables, cow-sheds, yard, courts, and piggeries—Accommodation for power—Implement, machinery, and cart sheds—Hay and grain sheds—Shelter sheds—Storage of manure—Approximate cost of farm buildings for sizes of farms and system of farming.

(*b*) Machinery and Implements.

9. *Power.*—The principle of action, construction, and method of working of steam, gas, and oil engines, petrol motors, and boilers—Estimation of the brake horse-power of engines—Care and management of engines and boilers—Power derived from water—Measurement of the quantity of water flowing in a stream—Water-wheels—Turbines—Pumps, principle of action and construction—Flow of water through pipes—Windmills—Cost and working expenses in connection with the above.

10. *Agricultural Machinery.*—The mode of action and the general principles involved in the construction and working of farm implements and machinery—Pulleys and belting—Power transmitted by belts—Toothed gearing—Shafting and bearings—Lifting appliances—Strength and care of chains—Lubrication—Construction of simple concrete foundations for engines and machines.

11. *Implements of Harvesting.*—Reaping machines—Mowing machines—Rakes—Tedders—Sweeps—Elevators—Potato raisers.

12. *Implements of Transit.*—Carts, waggons, rick lifters, traction engines, motors.

13. *Threshing and Food-preparing Machinery.*—Threshing machines, screens, winnowers—Hummelers, chaff cutters—Pulpers—Cake breakers.

14. *Dairy Appliances.*—Milking machines—Cream separators—Churns and other butter-working appliances—Milk delivery cans—Cheese-making utensils—Vats and presses.

N.B.—*Each Candidate should have with him at the Examination a pair of compasses, scales of equal parts, including a scale of one chain to an inch, and the scale fitting the Ordnance map,* $\frac{1}{2500}$ *or* 25·344 *inches to the mile, a small protractor, a set square, and a straight-edge about* 18 *inches in length.*

Candidates are expected to have had some experience with agricultural machinery and implements under actual working conditions, and to be capable of illustrating their answers, when necessary, by intelligible sketches or diagrams.

IV.—AGRICULTURAL CHEMISTRY.

1. *The Atmosphere.*—Its composition and relations to plant and animal life.

2. *Water.*—Rain water—Soil water and drainage—Drinking water—Sewage and irrigation.

3. *The Soil.*—Origin, formation, and classification of soils—Sampling—Analysis—Composition of soils—The chemical and physical properties of soils—The water and air of the soil—Biological changes in the soil—The soil in relation to plant growth—Fertility—Causes of infertility—Improvement of soils.

4. *Manures.*—Theories of manuring—Classification of manures—Origin, nature, and characteristics of manures—Manufacture of manures—Composition, analysis, adulteration, and valuation of manures—Farmyard manure and other natural manures—Green-manuring—Liming, marling, claying—Artificial manures, their origin and manufacture—Fertilisers and Feeding Stuffs Act—Sampling of manures.

5. *Poisons, Antiseptics, and Preservatives.*—General chemical composition and character of insecticides, fungicides, antiseptics, and preservatives used on the farm.

6. *Plants and Crops.*—Constituents of plants—Assimilation and nutrition of plants—Sources of the nitrogen and other constituents of plants—Germination—Action of enzymes—Composition and manurial requirements of farm crops—Food products derived from crops—Manuring experiments.

7. *Animals.*—Composition of animal body—Animal nutrition—Digestion—Assimilation, metabolism, respiration, and excretion.

8. *Foods and Feeding.*—Constituents of foods—Origin, nature, and composition of chief feeding-stuffs—Sampling, analysis, and adulteration of foods—Nutritive value and digestibility of food—Functions of chief food constituents—Energy values—Relation of foods to the production of work, meat, milk, and manure—Manurial residues of foods.

9. *Dairy Chemistry.*—The composition of milk, cream, butter, cheese, &c.—Conditions which influence the composition of milk and milk products—Action of ferments and enzymes on milk and milk products—Milk-testing—Analysis and adulteration of dairy products.

N.B.—*Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.*

V.—AGRICULTURAL BOTANY.

In addition to a general knowledge of the morphology, histology, and physiology of plants, candidates will be expected to possess a detailed knowledge of the following subjects:—

British grasses of agricultural importance: recognition of, at any stage of growth. Habitats of important species. Constitution of the grass flora of good meadows and pastures. Composition of seed mixtures for temporary and permanent leys on various soils. The effects of artificial manures on the flora of grass land.

The weeds of arable and grass land. Poisonous and parasitic weeds. Methods of distribution by seed and vegetatively: of eradication. Weeds as soil indicators. Recognition of the seeds of the common weeds, particularly those characteristically found in clover, grass, &c., seed.

The chief varieties of wheat, barley, oats, clovers, roots, and other farm crops: their suitability for various climatic and soil conditions. The

identification of the more important types of cereals by means of their grain characters. Characteristics of good and bad samples of cereals.

Materials used in feeding-cakes and meals : identification of.

Grafting, pruning, and the management of orchards.

Plant-breeding. Principles of heredity in plants. Pure lines. Fluctuating variability. Selection.

Disease in plants. Diseases due to the attacks of parasitic fungi. Resistance to disease : conditions affecting. The life-history of the more important species of Plasmodiophora, Synchytrium, Phytophthora, Peronospora, Sphærotheca, Nectria, Claviceps, Sclerotinia, Ustilago, Tilletia, Puccinia, Polyporus, Armillaria, and of any fungoid diseases scheduled from time to time by the Board of Agriculture and Fisheries.

Yeasts and fermentation.

The general outlines of bacteriology : nitrogen fixation, nitrification, and denitrification. Putrefaction and the bacteriology of milk, butter, and cheese.

VI.—AGRICULTURAL BOOK-KEEPING.

Principles of book-keeping ; single and double entry ; opening books, description of subsidiary books, with examples of entries therein ; the ledger ; posting ; preparation of trial balance ; valuation of stocks and effects ; closing and proving the books, preparation of profit and loss account and balance-sheet ; ruling off accounts.

Application of special methods to farms of varying requirements.

VII.—AGRICULTURAL ZOOLOGY.

1. The part played by common animals in helping or hindering agricultural operations, as illustrated by moles and voles, insectivorous and other birds, snails and slugs, useful and injurious insects, arachnids and myriapods, earthworms, &c.

2. *General Structure of Insects*, especially the external characters.

3. *Life-history of Insects.*—Economic importance of different stages. A knowledge of the life-history of the principal insect pests as affording a basis for appropriate treatment.

4. *Classification of Insects.*—The general characters of the following Natural Orders : Coleoptera, Lepidoptera, Hymenoptera, Diptera, Hemiptera, Orthoptera, Neuroptera.

5. *Acarina* injurious to Food Crops and Live Stock.

6. *Parasitic Worms.*—Flukes, Tapeworms, and Threadworms.

7. *Preventive and Remedial measures* in regard to insects, acarines, and worm Parasites—*e.g.*, farm practice in relation to the discouragement of Insect Attack. Encouragement of insect-eating birds and mammals. Artificial remedies. Insecticides. Treatment for Parasites.

N.B.—*Practical acquaintance with common animals, especially insects and worm parasites, will be expected. Where the Candidate is not acquainted with the scientific name of an animal, the generally received English name will be accepted. Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.*

VIII.—VETERINARY SCIENCE.

1. Elementary Anatomy and Physiology of the horse, ox, sheep, and pig.

2. The general principles of breeding—including the physiology of

reproduction, the laws of heredity, the periods of gestation, and the signs of pregnancy in the mare, cow, ewe, and sow.

3. Dentition as a means of determining the age of horses, cattle, sheep, and swine.

4. The management of farm stock in health and disease.

The following won the Diploma in 1918 :—

Catherine E. Aitkenhead, West of Scotland Agricultural College, Glasgow.
Eileen Lambton, University College, Reading.
James G. Mitchell, Harper-Adams Agricultural College, Newport, Salop.
Leonard C. Robinson, Harper-Adams Agricultural College, Newport, Salop.
George L. Whyte, North of Scotland College of Agriculture, Aberdeen.

No candidate on this occasion reached the honours standard.

Examination Papers of Past Years.

Copies of the Papers set at the Annual Examinations for the National Diploma in the Science and Practice of Agriculture, held from 1905 to 1918, may, so far as available, be had upon application. Price 6d. per set.

VETERINARY DEPARTMENT

The Society established a Veterinary Department in 1823, but by an arrangement made with the Royal College of Veterinary Surgeons, the Society's examination ceased in 1881. Holders of the Society's Veterinary Certificate are entitled to become Members of the Royal College of Veterinary Surgeons on payment of certain fees, without being required to undergo any further examination. The number of Students who passed for the Society's Certificate is 1183.

The Society votes annually eleven silver medals for Class Competition to each of the two Veterinary Colleges in Scotland, the one in Edinburgh and the other in Glasgow.

FORESTRY DEPARTMENT

THE Society grants FIRST and SECOND CLASS CERTIFICATES in FORESTRY.

1. An Examination will be held each alternate year about the month of April.

2. The next Examination will be held at 3 George IV. Bridge, Edinburgh, on 25th, 26th, and 27th March. Entries close on 24th February 919.

3. Candidates must possess—1. A thorough acquaintance with the theory and practice of Forestry. 2. A general knowledge of the following branches of study, so far as these apply to Forestry: (*a*) The Elements of Botany and Forest Zoology; (*b*) The Elements of Physics, Chemistry, and Meteorology; (*c*) Forest Engineering, including Land and Timber Measuring and Surveying; Mechanics and Construction, as applied to fencing, draining, bridging, road-making, and saw-mills; and Implements of Forestry; (*d*) Book-keeping and Accounts.

4. The examinations are open to candidates of any age, may be both written and oral, and will include such practical tests as may from time to time be decided to apply.

5. The maximum number of marks for each subject is 100; Pass marks for First-Class Certificate—Forestry, 75; all other subjects, 60. Pass marks for Second-Class Certificate—Forestry, 60; all other subjects, 50.

6. A Candidate who obtains Pass marks in certain subjects, but fails in others, may come up for these other subjects alone, it being understood that without the special permission of the Society no Candidate will be eligible to enter for more than two subsequent examinations.

7. A Candidate who has obtained the Second-Class Certificate may enter again for the First-Class Certificate.

The list of students who obtained certificates prior to 1899 appears in the 'Transactions,' Fifth Series, vol. xi. (1899).

The following have since obtained First-Class Certificates:—

ERIC ARTHUR NOBBS, Department of Agriculture, Cape Town, ... 1899
GEORGE POTTS, Grey College, Bloemfontein, Orange River Colony, ... 1899
DUNCAN S. RABAGLIATI, 1 St Paul's Road, Bradford, . 1901
FRANK SCOTT, Dumfries House Mains, Cumnock, . . 1903
WILLIAM T. STOCKLEY, Rose Villa, Garswood, near Wigan, 1906
A. FRANK WILSON, C.D.A. (Edin.), Reedieleys, Auchtermuchty, ... 1907
GEORGE FISHER, Farm Brook, Pilling, Garstang, Lancs., . 1909
JOHN PATTEN, jun., Hulne Park, Alnwick, . . . 1909
ALEXANDER MITCHELL, Dalmeny Park, Edinburgh, . 1909
JOHN D. DAVIDSON, Brimstage, Birkenhead, . . . 1911

DONALD DOULL, M.A., A.R.C.Sc., High School, Kelso, . 1911
JAMES W. MACKAY, Jervaulx Abbey, Middleham, Yorks., 1915
HARRY WATSON, Darnaway, Forres, ... 1915
REGINALD WATT HUNTER, 94 St George's Terrace, Newcastle-on-Tyne, ... 1918

The following have since obtained Second-Class Certificates :—

WILLIAM BRUCE, B.Sc., East of Scotland College of Agriculture, Edinburgh, ... 1901
RAJAPPIER SWAMINATHAN, 56 Jesus Lane, Cambridge, . 1901
THOMAS USHER, Courthill, Hawick, ... 1901
ALLAN CARRUTH, Lawmarnock, Kilbarchan, . . . 1905
ALEX. M. LUMSDEN, Newburn Schoolhouse, Upper Largo, 1905
ROBERT M. WILSON, Laws Cottage, Duns, . . . 1905
THOMAS CAMPBELL, Greystoke, Penrith, ... 1906
DONALD FERGUSON, Quarry Lane, Lennoxtown, . . 1906
CHARLES PENRHYN ACKERS, Huntly Manor, Gloucester, 1908
ROBERT HOWIE, Beechwood, Arbroath, ... 1908
JOHN TROTTER, D.Sc., 22 West Savile Terrace, Edinburgh, 1908
JAMES A. S. WATSON, Downieken, Dundee, . . . 1908
NORMAN H. PEARSON, 52 Percy Park, Tynemouth, . . 1909
LIONEL F. STOBART, Royal Agricultural College, Cirencester, ... 1911
ALEXANDER GEORGE NORRIE, Cairnhill, by Turriff, . . 1913
WILLIAM WATT, Darnaway, Forres, ... 1913
WILLIAM P. GREENFIELD, 6 Littlefield Lane, Grimsby, . 1915

SYLLABUS OF EXAMINATION

I.—SCIENCE OF FORESTRY AND PRACTICAL MANAGEMENT OF WOODS.

I. *Principles of Scientific Forestry.*—1. Effects of heat, light, moisture, and air-currents on forest vegetation. 2. Effects of depth, porosity, moisture, and chemical composition of the soil on forest vegetation. 3. Effects of forest vegetation on the soil and air. 4. Rate and extent of development, longevity, and reproductive power of trees. 5. Pure and mixed woods. 6. Systems of sylviculture.

II. *Forest Organisation.*—7. General ideas regarding a regulated system of forest management. 8. Knowledge of working plans of forests.

III. *Practical Management of Woods.*—9. Draining and irrigation. 10. Choice of species for various situations. 11. Seed and sowing, including nurseries. 12. Planting. 13. Natural regeneration by seed, shoots, and suckers. 14. Formation of mixed woods. 15. Tending of young woods. 16. Pruning. 17. Thinning. 18. Sylvicultural characteristics of the principal trees.

IV. *Injuries by Storms and Fires.*—19. Storms. 20. Fires.

V. *Timber.*—21. Its technical properties. 22. Its defects. 23. Recognition of different kinds of timber. 24. Processes for increasing its durability.

VI. *Utilisation of Produce.*—25. Uses of wood and other produce. 26. Felling. 27. Conversion. 28. Seasoning. 29. Transport. 30. Sales. 31. Harvesting of bark.

II.—FOREST BOTANY AND FOREST ZOOLOGY.

(*a*) Forest Botany.

The fundamental facts of morphology, physiology, and classification of plants. The structure and function of the plant-cell and the plant-tissues. Their primary distribution. The secondary changes they exhibit in consequence of perennation.

The structure and function of the root and shoot in flowering-plants. Buds, their forms and uses. The flower. The fruit. The seed.

The structure and function of vegetative and reproductive organs of fungi.

Relationship of plants to air, soil, and water. Effect of light, heat, and mechanical agencies upon plants. Nutrition. The nature and elements of the food of plants. Sources of plant-food. The absorption, elaboration, transference, and storage of food. Respiration and transpiration. Parasites and saprophytes. Symbiosis.

Growth of plants in length and thickness. Correlation of growth, pruning. Germination of seeds. Formation of wood and bark. Healing of wounds.

Diseases of plants due to faulty nutrition and unfavourable circumstances of growth. Diseases due to attacks of fungi.

Natural reproduction and propagation by seeds and by buds. Fertilisation of flowers. Hybridisation. Artificial propagation by budding, grafting, layering, and cutting.

The characters of the large groups and classes of the vegetable kingdom. The characters of the families of plants which include the chief timber trees. The botanical characteristics of the principal British forest-trees (including the structural features of their wood). The weeds of the forest and their significance.

(*b*) Forest Zoology.

The group Insecta: its position in the animal kingdom. Structure, mode of reproduction, and metamorphosis of insects. The outlines of classification of the group. Conditions favourable to the numerical increase of insects. Natural checks to increase (*e.g.*, birds, mammals, parasitic insects). The identification and life-history of the more important insects injurious to forest trees and fruit trees. The damage caused by these insect pests and their mode of attack. The damage caused by animals. Preventive and remedial measures.

III.—PHYSICS, CHEMISTRY, AND METEOROLOGY.

Physics.

Mass, weight, specific gravity, solid, liquid, and gaseous states of matter. Capillarity, osmose, vapour tension, suction pump, force pump, syphon, barometer, atmospheric pressure. Boyle's law. Levers and pulleys. Heat, measurement of heat, specific heat; transference of heat by conduction, convection, and radiation. Boiling and freezing. Latent heat. The thermometer. The conservation and transformation of energy. Light—reflection, refraction, polarisation; the spectrum. The rudiments of electricity and magnetism.

Chemistry.

Elements. Oxygen, hydrogen, nitrogen,—their preparation, properties, and chief compounds. Acids, bases, salts. Combustion, oxidation, reduction. Sulphur, carbon, phosphorus; and their compounds, with oxygen and hydrogen. Metals—potassium, sodium, calcium, magnesium, aluminium, iron, copper, lead, mercury, and their chief compounds. Carbohydrates, marsh gas, olefiant gas, alcohol, acetic acid, oxalic acid. Distillation of wood and coal.

Meteorology.

The atmosphere, its composition and physical properties. Measurement of pressure and temperature. The barometer. Rain, hail, snow, fog, cloud, dew, the dew-point, hoar frost. The weathering of rocks and soils. Gases injurious to vegetation.

IV.—FOREST ENGINEERING, INCLUDING LAND AND TIMBER MEASURING AND SURVEYING; MECHANICS AND CONSTRUCTION AS APPLIED TO FENCING, BRIDGING, ROAD-MAKING, AND SAW-MILLS.

1. The use of the level and measuring-chain. Measuring and mapping surface areas. 2. The measurement of solid bodies—as timber, stacked bark, fagots, &c., earthwork. 3. The different modes of fencing and enclosing plantations; their relative advantages, durability, cost of construction, and repairs. 4. The setting out and formation of roads for temporary or permanent use. 5. The construction of bridges over streams and gullies; of gates or other entrances. 6. The construction and working of estate saw-mills.

V.—ARITHMETIC—BOOK-KEEPING.

1. Arithmetic—including Practice, Proportion, and Decimal Fractions. 2. Book-keeping—including the description of books to be kept, and the solution of practical questions in Book-keeping and the preparation of Accounts.

EXAMINATION PAPERS, 1919.

PRACTICAL FORESTRY.

1. Describe the working plan of any woodland with which you are familiar, drawing attention to any defects, and point out how these might be remedied.

2. How would you be guided in deciding what species of trees you would select (*a*) to re-stock a newly cleared area, (*b*) to plant a stretch of rough hill pasture of varying quality?

3. In planting an area of 200 acres with Larch, Corsican Pine, Spruce, Sitka Spruce, and Douglas, how would you proceed to make the most of each species? Name any other species you would introduce, and give your reasons for doing so.

4. (*a*) What benefits are derived from drainage, and what method and system of drainage would you adopt (1) on gently sloping peaty land, (2) on a wet clay loam steep slope? (*b*) What are the objects and benefits of thinning?

5. (*a*) How would you know if a wood (1) 20 years old, (2) 50 years old, had a satisfactory degree of density? (*b*) What effect has understocking (1) on the individual tree, (2) on the crop in general? (*c*) How would you treat a 15-year-old plantation composed of an irregular mixture of Larch, Scots Pine, Spruce, and Douglas?

6. Describe the plant you would recommend for an extensive property, having a good working plan for the woods, containing an abundance of varied marketable timber, which it is proposed will be utilised, as far as required, for estate purposes. How would you dispose of surplus timber?

(*Three hours allowed.*)

FOREST BOTANY AND FOREST ZOOLOGY.

(*A*) FOREST BOTANY.

(**Four** *questions only to be attempted.*)

1. Give a general account of the Order Cupuliferæ.

2. Compare and contrast in structure the young root and young stem of a Dicotyledonous plant.

3. Describe carefully, with drawings, the male and female cones of the Pine.

4. What are the three worst fungus enemies of the trees in your district? Write a life-history of one of them.

5. How does a tree get its water-supply? What are the conditions that determine the intake of water, and what is the importance of water to the tree?

(*B*) FOREST ZOOLOGY.

(**Two** *questions only to be attempted.*)

1. Name two common Scale Insects on forest trees, and describe in detail one of them.

2. What animals might be present underneath the bark stripped from a dead or dying piece of pine stem? Add a note on each of them.

3. Compare and contrast a sawfly and a wood-wasp under the heads—

(*a*) external appearance of the adult;
(*b*) the larva;
(*c*) the damage done.

(*Two and a half hours allowed.*)

PHYSICS, CHEMISTRY, AND METEOROLOGY.

1. Explain the meaning of the terms "acids, bases, and salts." Describe the properties of each class, and give examples from substances containing calcium and phosphorus.

2. Describe how the destructive distillation of wood may be carried out. State briefly what you know of the composition and value of the distillate. Compare the volatile products with those obtained from the destructive distillation of coal.

3. What is meant by atmospheric pressure, and how would you determine it? Is atmospheric pressure constant, and if not, what are the chief causes of its variation in any locality?

4. What do you understand by the term "element"? Name the chief properties of elements, classifying into groups those with like properties.

5. Name the chief factors which operate in bringing about the reduction of rocks to soil. Describe separately the mechanical and chemical agencies, and give an example of the operation of each in the process of weathering.

(*An hour and a half allowed.*)

FOREST ENGINEERING.

1. The following notes from a Field Book refer to measurements taken for the purpose of estimating the quantity of earth to be excavated in connection with the construction of a road.

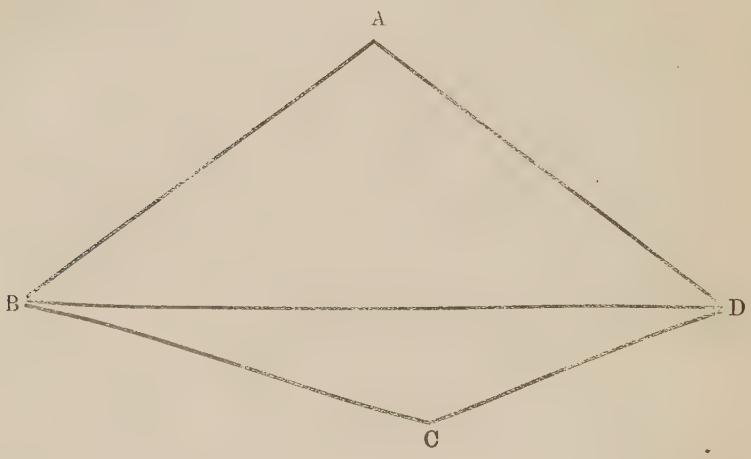
One side is vertical, and the opposite side has a slope of $1\frac{1}{2}$ to 1. The width at the bottom is 18 feet, and the total length is 210 feet, which may be assumed to be divided into three equal parts, and the measurements made at the middle of each part.

Make a dimensioned sketch of each section, and calculate the total amount of earth to be excavated in cubic yards.

Rise.	B.S.	I.S.	F.S.	Fall.	Reduced Level.	Remarks.
	12·86	8·26 6·59	5·85		O.	1st Section.
	10·96	7·03 6·99	6·72		O.	2nd Section.
	8·90	6·84 7·05	6·26		O.	3rd Section.

2. Draw the plan of a field from the following notes to a scale of 1 chain to the inch, and find the area of the field (see fig. 1).

Fig. 1.



Also measure the length of the perpendicular from A to BD.

	Links.
	⊙ D
	820
	630
0	500
45	390
30	250
	⊙ A

	⊙ A
	760
42	450
25	310
	⊙ B

⊙ D
540
⊙ C
⊙ C
610
⊙ B
⊙ B
1050
⊙ D

3. Make up the following Level Book. Plot the section to a horizontal scale of 1 inch to 1 chain and a vertical of 1 inch to 10 feet.

Rise.	B.S.	I.S.	F.S.	Fall.	Reduced Level.	Distance Links.	Remarks.
	1·52				30		B.M.
	7·48		8·62			0	O A
		10·71				120	
	5·91		13·56			250	
		8·65				340	
	9·44		6·37			480	
		8·13				580	
		6·28				680	
	8·38		4·19			800	
		5·41				930	
		3·25				1050	
	6·65		0·73			1200	
		8·29				1360	
			11·53			1550	O B

4. Describe, with the aid of diagrams, how you would proceed in the field in order to find the height of an object—

(*a*) The base of which you can approach.

(*b*) The base of which is inaccessible.

5. Give dimensioned sketches, showing in cross-section a macadamised road—

(*a*) On a bank ;

(*b*) In a cutting ;

(*c*) On the side of a hill having a steep sidelong slope.

How would you provide for drainage ?

6. Describe and sketch the general arrangement of a portable saw-milling plant.

How is the timber brought to, and taken from, the saw ?

ARITHMETIC AND BOOK-KEEPING.

I. Arithmetic.

1. A piece of timber is 19 feet 6 inches long, 16 inches broad, and $10\frac{1}{2}$ inches deep. Its cost is £2, 11s. 6d. Find the cost per cubic foot, stating the pence to three places of decimals.

2. Find by practice the value of 211 tons 11 cwt. 37 lb. @ 9s. 4d. per cwt.

3. A purchases a quantity of timber and sells it to B at a profit of 8 per cent. B sells the same timber to C at a profit of 10 per cent. What profit per cent would A have made if he had sold the timber direct to C at a price the latter paid to B ? State your answer in decimals.

4. A rectangular piece of ground 200 yards long and 80 yards broad is to be planted with young trees. The trees are to be 12 feet apart, and there is to be a space of 6 feet between the outermost trees and the boundaries. How many trees are required ?

II. Book-keeping.

You are the forester on the estate of Craigbeck. At 1st June 1914 the balance in bank was £53, while the cash on hand was £7, and there was a sum of £159 due to the estate by Alexander Black. The following are your transactions during the month of June 1914:—

1914.
June 1. Sold to Alexander Black on credit 1000 larch trees @ 8s. 6d.
" 2. Paid cash for carriage, to be recovered from Alexander Black, £5.
" 4. Sent cheque to Peter Jones in settlement of his account of £40 for implements, less discount at 5 per cent.
" 7. Received rent of cottage, £8 in cash.
" 9. Purchased from Alexander Black a brown horse, the price of which, £40, it is arranged shall be set against his account.
" 11. Received from auctioneer and paid into bank cheque p. £155, being net proceeds of sales by him.
" 15. Received and paid into bank Alexander Black's cheque in settlement of his account to date, allowing him £5 discount.
" 18. Sent to proprietor cheque p. £250.
" 23. Paid for young trees by cheque, £18.
" 30. Drew from bank £20.
Paid salary and wages, £17.

(1) Write up Alexander Black's account in the Ledger.

(2) Write up the cash book, keeping separate columns for bank, cash, and discount, and showing the balances in bank and on hand at 30th June.

(*One hour and a half allowed.*)

DAIRY DEPARTMENT

EXAMINATION IN THE SCIENCE AND PRACTICE OF DAIRYING

This Examination, instituted in 1897, is conducted by the National Agricultural Examination Board, appointed jointly by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland.

REGULATIONS.

1. The Societies may hold annually in England and in Scotland, under the management of the National Agricultural Examination Board appointed by them, one or more Examinations for the National Diploma in the Science and Practice of Dairying; the Diploma to be distinguished shortly by the letters "N.D.D."

2. The Examinations will be held on dates and at places from time to time appointed and duly announced.

3. A non-returnable fee of *Two Guineas* will be required from each candidate.

4. Forms of Entry for the Examination in England may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C. 1," and must be returned to him duly filled up, with the entry-fee of £2, 2s., on or before August 15, 1919.

5. Forms of Entry for the Examination in Scotland may be obtained from "The Secretary, Highland and Agricultural Society of Scotland, 3 George IV. Bridge, Edinburgh," and must be returned to him duly filled up, with the entry-fee of £2, 2s., on or before August 15, 1919.

6. A candidate may enter for the Examination either in England or Scotland, but not in both, and a candidate who has once taken part in an Examination in England cannot enter for an Examination in Scotland, or *vice versâ*.

7. As a preliminary to the acceptance of an application for permission to enter for the Examination, a candidate must produce:—

(1) A certificate testifying that he or she has received at least *SIX* session months instruction (not necessarily continuous) in practical dairy work at an approved Dairy training institution.

(2) Evidence that he or she has spent at least SIX months on an approved Dairy farm (which period must not run concurrently with that referred to in sub-section 1), and that he or she has taken part in the work.

(3) Certificates in a prescribed form, from a recognised institution (or recognised institutions) showing that he or she has attended approved courses in Chemistry, Bacteriology, and Botany, and has satisfied the authorities of the institution of his (or her) fitness for admission to the Examination.

8. In the Examination a candidate will be required to satisfy the Examiners, by means of written papers, practical work, and *vivâ voce*, that he or she has—

(1) A general knowledge of the management of a Dairy Farm, including the rearing and feeding of Dairy Stock, the candidate being required to satisfy the Examiners that he or she has had a thorough

training and practical experience in all the details of Dairy work as pursued on a farm.

(2) A thorough acquaintance, both practical and scientific, with everything connected with the management of a Dairy, and the manufacture of Butter and Cheese.

(3) Practical skill in Dairying, to be tested by the making of Butter and Cheese.

NOTE.—A candidate must be prepared to make any one of the following varieties of Hard-pressed Cheese, the Examiner in Cheesemaking having the option of saying during the Examination what variety a candidate shall make :—

AT THE ENGLISH CENTRE—Cheddar, Cheshire, or Derby.

AT THE SCOTTISH CENTRE—Cheddar, Dunlop, or Cheshire.

(4) Capacity for imparting instruction to others.

9. The Board reserve the right to postpone, to abandon, or in any way, or at any time, to modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

DATES OF EXAMINATIONS IN 1919.

ENGLAND—SATURDAY, September 13th, and following days, at the University College and British Dairy Institute, Reading ; last date for receiving applications, FRIDAY, August 15th.

SCOTLAND—FRIDAY, September 19th, and following days, at the Dairy School for Scotland, Kilmarnock ; last date for receiving applications, FRIDAY, August 15th.

SYLLABUS OF SUBJECTS OF EXAMINATION IN THE SCIENCE AND PRACTICE OF DAIRYING

I.—GENERAL MANAGEMENT OF A DAIRY FARM.

1. *General Management of Pastures and Crops on a Dairy Farm.*

2. *Buildings.*—Situation, Surroundings, Construction, Ventilation, and Drainage of Farm Buildings. Suitability of building materials. Water supply. Construction and arrangement of Dairies : (*a*) for General Purposes ; (*b*) for Special Purposes.

3. *Foods and Feeding.*—Summer and Winter Feeding of Dairy Cattle. Root crops. Green fodder. Ensilage. Different kinds of food and their composition. Their effect upon Milk, Butter, and Cheese. Special Foods used in Dairy Feeding. Preparation of food for Dairy Stock. Rearing and feeding of young Stock. Feeding and management of Pigs and Poultry.

4. *Dairy Cattle in Health and Disease.*—Characteristics of different Breeds, and choice of Dairy Cattle. General functions of the organs of the animal body. Breeding. Parturition. Organs which secrete milk. Process of milk secretion. Changes which food undergoes during digestion. Diseases of Dairy Cattle and their remedies.

II.—MANAGEMENT OF DAIRY.

1. *Milk and Cream.*—Process of Milking. Dairy Utensils and Appliances, hand and power. Cooling of Milk. Separation and ripening of Cream. Different systems of Cream-raising. Utilisation of Skim-milk. Keeping of Milk. Importance of Cleanliness. Diseases spread by Milk. Conveyance and sale of Milk. Milk records. Keeping of Dairy and

Farm Accounts. Creameries. Butter and Cheese Factories. Different systems of Dairying and their comparative returns.

2. *Butter.*—Churns and other Butter-making appliances, hand and power. Souring of Cream. Churning. Washing and working of Butter. Butter-milk. Packing and transmission of Butter. Salting and keeping of Butter. Colouring. Characteristics of good Butter.

3. *Cheese.*—Principles of its manufacture. Making of different kinds of Cheese (from cream, whole-milk, and skim-milk). Acidity of Milk. Use of Rennet and its substitutes. Whey. Appliances for Cheese-making. Ripening and storage of Cheese. Packing and sale of Cheese. Making of Cream and other soft Cheeses.

III.—CHEMISTRY AND BACTERIOLOGY.

[*N.B.*—In this Section there will be expected of the candidate a sound understanding of the scientific principles underlying the practice of Dairying, a knowledge of the composition, nature, properties, and changes undergone by the different substances met with in Dairying, and a general acquaintance with the principles of laboratory methods so far as Dairying is concerned.]

1. *General Principles of Chemistry.*—The nature of elements and compound bodies. The different forms of matter—solid, liquid, gaseous. Specific gravity, and instruments for determining it. Temperature, and methods of measuring it. Thermometric scales. The influence of temperature in Dairy operations. Physical and chemical changes involved in the following: solution, precipitation, filtration, distillation, oxidation, and reduction. Acids, Bases, Salts—their distinctive properties. Acidity and Alkalinity—their influence and quantitative estimation.

The Atmosphere—its constituents and impurities; its influence on Dairy operations. Atmospheric pressure.

Water—constituents of pure and natural waters. The impurities of water, and whence derived. The importance of a pure water supply in Dairying.

General knowledge of the elementary chemistry of the following substances and their compounds so far as met with in Dairying: Potash, Soda, Ammonia, Lime, Phosphoric Acid, Alcohol, Acetic Acid, Carbonic Acid, Butyric Acid, Lactic Acid, Albumen, Casein, Fats, Milk-sugar, Glycerine, Pepsin.

Saponification of Fats.

2. *Milk and its Products.*—The nature, composition, properties, and chemical constituents of milk. Microscopical appearances presented by milk. The circumstances that affect the quality and quantity of milk produced by the cow. The influence of feeding. The changes which occur in the keeping of milk, and how produced. The natural and artificial souring of milk. Rennet, its nature and use. Physical and chemical changes involved in the making and keeping of Butter, and in the manufacture and ripening of Cheese. Separated Milk, Condensed Milk, Fermented Milk. The use of Preservatives. Methods of Milk-testing—Mechanical methods, their theory and practice. A general knowledge of the methods employed in the chemical analysis of Milk and Butter. Adulteration of Milk, Cream, Butter, and Cheese—the ways in which adulteration is practised, the changes in composition thereby produced, and a general knowledge of the methods employed in detecting the same.

3. *The Chemistry of Feeding.*—The principal constituents of Food materials, and the functions they severally fulfil. The influence of Food constituents on milk production. Assimilation and Digestion. Animal Heat and Respiration. Milk as a Food. The relation of Food to Manure.

4. *Bacteriology.*—Moulds. Yeasts. Bacteria. The principal kinds of Bacteria met with in Dairying—their forms, methods of reproduction, and conditions of life. The influence of physical agencies upon Bacterial life. Air and Water as carriers of Bacteria. The changes produced by Bacteria in milk and its products. Useful forms and their functions. Harmful forms and their effects—Coagulation, Discoloration, Taints, &c. Pathogenic organisms. The classification of organisms—organised ferments and enzymes. The isolation of Bacteria. Methods of preparation of pure cultures and their practical use. Nutritive media. Soil Bacteriology—Assimilation of Nitrogen by Plants—Nitrification—Denitrification. Pasteurisation and Sterilisation — the practical application of these to Dairy matters. Fermentation and Putrefaction. Disinfectants and Preservatives.

N.B.—*Candidates are required to bring their Laboratory Notes to the Oral Examination in this subject.*

IV.—PRACTICAL SKILL IN DAIRY WORK.

Candidates must be prepared—(1) to produce at or before the Examination a satisfactory certificate of proficiency in the Milking of Cows, signed by a practical Dairy Farmer, and to satisfy the Examiners by a practical test, if so required ; (2) to churn and make into Butter a measured quantity of Cream ; and (3) to make one Cheese of each of the following varieties : (i) *Hard-pressed, of not less than 30 lb. ; (ii) Veined or blue-moulded, of not less than 10 lb. ; and (iii) also to make one or other of the following Soft Cheeses : Cambridge, Camembert, Coulommier, or Pont l'Evêque.

* A candidate must be prepared to make any one of the following varieties of Hard-pressed Cheese :—

English Students—Cheddar, Cheshire, or Derby.

Scottish Students—Cheddar, Dunlop, or Cheshire.

The Examiner in Cheesemaking will intimate the kind of Cheese to be made during the Examination.

V.—CAPACITY FOR IMPARTING INSTRUCTION TO OTHERS.

Candidates must also show practically that they are familiar with the management of a Dairy, and are capable of imparting instruction to others.

The following obtained the Diploma in Scotland in 1918 :—

Margaret Carmichael, Torridon, Achnasheen, Ross.
Mary Cross, Alcaig, Conon Bridge.
Ethel M. Cruickshank, Sunnybank, Cruden Bay.
Jean Y. Cunningham, The Broom, Auchterarder.
Kate Edwards, Tydraw, Nelson, nr. Cardiff.
Isabel Helen Ellis, Kinclune, Glenkindie.
Annie A. B. Hutcheson, Balloan, Inverness.
David G. Ironside, Littlehill, Maud.
Jeanie MacGillivray, Easter Ellister, Port Charlotte, Islay.
Angusina Macpherson, Durine, Durness, Lairg.
Jeanie C. Mair, Waterside House, Fenwick.
Helen Penny, Shannas, Mintlaw.
Bessie Taylor, Ellangowan, Stevenston.
George Lee Whyte, Mains of Orton, Orton Station.

The following obtained the Diploma in England in 1918 :—

Amy M. Braithwaite, 31 Broad Street, Windermere.
Helen E. Burton, St Andrew's Hall, Reading.
Kathleen M. Collens, St Andrew's Hall, Reading.
Kathleen Crossland, St Andrew's Hall, Reading.
Adelaide M. Davis, 52 Addington Road, Reading.
Olive F. Fawcett, St Andrew's Hall, Reading.
Dorothy Hitchon, Rhyddington, Oswaldtwistle, Lancs.
Alice Lewis, Cark Hall, Cark-in-Cartmel, Carnforth.
Gwynaeth R. Lyne, University College, Reading.
Marjorie E. M'Cubbins, St Andrew's Hall, Reading.
James M'Donnell, British Dairy Institute, University College, Reading.
Olwen Matthews, 52 Addington Road, Reading.
Marjorie M. R. Muir, Nether Croft, Ayr, Scotland.
Barbara C. S. Prowse, St Andrew's Hall, Reading.
Dorothy M. Salsbury, St Andrew's Hall, Reading.
Frederick H. Spencer, Buenos Ayres, 44 Portchester Road, Bournemouth.
Rose Townend, St Andrew's Hall, Reading.
Sophie C. Yorke, St Andrew's Hall, Reading.
Catherine M. Williams, Bryn Awel, Gaerwen, Anglesey.

Examination Papers of Past Years.

Copies of the Papers set at the Annual Examinations for the National Diploma in the Science and Practice of Dairying, held from 1896 to 1918, may, so far as available, be had on application. Price 6d. per set.

CHEMICAL DEPARTMENT

Chemist to the Society—J. F. Tocher, D.Sc., F.I.C., Crown Mansions, 41½ Union Street, Aberdeen.

The object of the Chemical Department is to promote the diffusion of a knowledge of Chemistry as applied to agriculture among the members of the Society, to carry out experiments for that purpose, to assist members who are engaged in making local experiments requiring the direction or services of a chemist, to direct members in regard to the use of manures and feeding-stuffs, to assist them to put the purchase of these substances under proper control, and in general to consider all matters coming under the Society's notice in connection with the Chemistry of Agriculture.

MEMBERS' PRIVILEGES IN RESPECT TO ANALYSES.

MANURES, FEEDING-STUFFS, SOILS, AND AGRICULTURAL PRODUCTS.

The fees for analyses made for members of the Society shall, until further notice, be as follows:—

The determination of one ingredient in a single sample of a *manure* or of a *feeding-stuff*,	5s.
The determination of two or more ingredients in a single sample of a *manure* or of a *feeding-stuff*,	10s.

For example—

Linseed and other cakes, for oil or for albuminoids, Feeding-meals, ground cereals, for oil or for albuminoids, Bone-meals, for nitrogen or for phosphate, Compound manures, for nitrogen or for soluble phosphates, or for insoluble phosphates or for potash, Superphosphate, for soluble phosphate or for insoluble phosphate, Thomas-phosphate powder, for citric soluble phosphate or for total phosphate,	5s.
Linseed and other cakes, for oil and albuminoids, &c., Feeding-meals, ground cereals, for oil, albuminoids, &c., Bone-meals, for nitrogen, phosphate, &c., Compound manures, for nitrogen, soluble phosphates, insoluble phosphates, and potash, Superphosphate, for soluble phosphate and insoluble phosphate, Thomas-phosphate powder, for citric soluble phosphate and total phosphate,	10s.

Limestone, giving the percentage of lime,	£0 5 0
Limestone, complete analysis,	1 0 0
Lime, including ground lime, percentage of alkaline lime,	0 5 0
" " " complete analysis,	1 0 0
Analysis of soil, to determine fertility and recommendation of manurial treatment,	1 10 0
Complete analysis of soil,	2 10 0
Analysis of agricultural products—hay, grain, ensilage, roots, &c.,	1 0 0

These charges apply only to analyses made for agricultural purposes, and for the sole and private use of members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

Valuations of manures, according to the Society's scale of units, will be supplied if requested.

DAIRY PRODUCE.

Milk, full analysis,	£0 10 0
" solids and fat,	0 5 0
" fat only,	0 2 6
Butter, full analysis,	0 10 0
" partial analysis (water and fat),	0 5 0
Cheese,	0 10 0

WATER.

Analysis of water[1] to determine purity and fitness for domestic use (the Committee reserve power to refuse from one member more than two samples annually at the reduced fee).....at the reduced fee of	1 0 0

MISCELLANEOUS.

Search for poisons in food or viscera,	2 0 0
Sulphate of copper, percentage of copper and purity,	0 5 0
" " complete analysis,	0 10 0
Arsenic, carbolic acid and tar acids, and other poisons used in making sheep dips, insecticides, &c.,	5s. to £1

Samples should be sent (carriage paid) to Dr J. F. Tocher, Crown Mansions, 41½ Union Street, Aberdeen.

Note to Members sending Samples for Analysis.

The Directors are anxious to take any steps in their power to expose the vendors of inferior fertilisers and feeding-stuffs, and the members can give them assistance in this by supplying to the chemist, when sending samples for analyses, information as to the guarantee, if any, on which the goods were sold, and also as to the price charged.

INSTRUCTIONS FOR SELECTING SAMPLES FOR ANALYSIS.

MANURES.

Any method of sampling mutually agreed upon between buyer and seller may be adopted, but the following method is recommended as a very complete and satisfactory one: Four or more bags should be selected for sampling. Each bag is to be emptied out separately on a clean floor, worked through with the spade, and one spadeful taken out and set aside. The four or more spadefuls thus set aside are to be mixed together until a uniform mixture is obtained. Of this mixture one spadeful is to be taken, spread on paper, and still more thoroughly mixed, any lumps which it may contain being broken down with the hand. Of this mixture two samples of about half a pound each should be taken by the purchaser or his agent, in the presence of the seller or his agent or two witnesses (due notice having been given to the seller of the time and place of sampling), and these samples should be taken as quickly as possible, and put into bottles or tin cases to prevent loss of moisture, and having been labelled, should be sealed by the samplers—one or more samples to be retained by the purchaser, and one to be sent to the chemist for analysis.

[1] Cases containing bottles for water samples and instructions for sampling are sent from the laboratory on application.

FEEDING-STUFFS.

Samples of feeding-stuffs which are in the form of meal may be taken in a similar manner.

Samples of cake should be taken by selecting four or more cakes from the bulk. These should be nutted to a size not larger than walnuts. The nutted cake should then be thoroughly mixed and samples of not less than one pound each taken from it. The samples should be put into bottles or tins, sealed up, and labelled. One sample should be sent to the analyst, and one or more duplicates retained by the purchaser.

SOILS.

Dig a little trench about two feet deep, exposing the soil and subsoil. Cut from the side of this trench vertical scrapings of the soil down to the top of the subsoil. Catch these on a clean board, and collect in this manner two pounds of soil taken from the whole surface of the section. Similar scrapings of subsoil immediately below should be taken and preserved separately. Five or six similarly drawn samples at least should be taken from different parts of the field, and kept separate while being sent to the chemist, that he may examine them individually before mixing in the laboratory.

VEGETABLE PRODUCTS.

Turnips, &c., at least 50 bulbs carefully selected as of fair average growth.

Hay, straw, ensilage, &c., should be sampled from a thin section cut across the whole stack or silo, and carefully mixed ; above 2 lb. weight is required for analysis.

Grain should be sampled like manures.

DAIRY PRODUCE.

Milk.—Samples of milk from individual cows should be taken direct from the milk-pail after complete milking. Average samples from a number of cows should be taken immediately after milking. Specify whether the sample is morning or evening milk, or a mixture of these. Samples to be tested for adulteration should not be drawn from the bottom or taken from the top of standing milk, but they should be ladled from the vessel after the milk has been thoroughly mixed. Samples of milk should be sent immediately to the analyst.

For most purposes a half-pint bottle of milk is a large enough sample.

Butter and Cheese.—About quarter-pound samples are required.

WATERS.

When the water is from a well, it should be pumped for some minutes before taking the sample.

If the well has been standing unused for a long time, it should be pumped for some hours, so that the water may be renewed as far as possible.

If the well has been newly dug or cleaned out, it should be pumped as dry as possible, daily, for a week before taking the sample.

Water from cisterns, tanks, ponds, &c., should be sampled by immersing the bottle entirely under the water, and holding it, neck upwards, some inches below the surface. *Water from the surface should not be allowed to enter the bottle.*

Spring or stream water should not be sampled in very wet weather, but when the water is in ordinary condition. Such waters should be sampled by immersing the bottle, if possible; but if not deep enough for that purpose, a perfectly clean cup should be used for transferring the water to the bottle.

When the bottle has been filled the stopper should be rinsed in the water before replacing it.

Interference with or disturbance of wells or springs, or the ground in their immediate vicinity, must be carefully avoided during sampling, and for at least twenty-four hours before it.

After a sample has been taken, it should be sent to the laboratory as speedily as possible.

A description of the source and circumstances of the water should accompany the sample, as the interpretation of the analytical results depends to some extent on a knowledge of such particulars.

N.B.—Stone jars and old wine bottles are unsuitable for conveying samples. Winchester quarts chemically cleaned should be obtained from the laboratory, Crown Mansions, 41½ Union Street, Aberdeen.

LOCAL ANALYTICAL ASSOCIATIONS.

With the view of encouraging, as well as regulating the conduct of, Local Analytical Associations, the Society, from 1881 to 1893, contributed from its funds towards their expenses a sum not exceeding £250 annually. In view of the passing of the Fertilisers and Feeding Stuffs Act, 1893, it was decided, at a meeting of the Directors on the 6th of December 1893, to discontinue that grant after the 1st of March 1894.

COMPOSITION AND CHARACTERISTICS OF MANURES AND FEEDING-STUFFS.

(*See* '*Transactions*,' *Fifth Series*, *vol. xi.* 1899.)

FORMS OF GUARANTEE

Guarantee of Manure.

I guarantee that the manure called.....and sold by me to .....contains a minimum of—

Soluble phosphoric acid	=Phosphate of lime dissolved	.....per cent.
Insoluble phosphoric acid	=Phosphate of lime undissolved	.....per cent.
Potash salts . .	=Potash (K_2O) . . .	.....per cent.
Total nitrogen . .	=Ammonia	.....per cent.

Signature of seller.....

Date.....19...

Guarantee of Feeding-Stuff.

I guarantee that the feeding-stuff called.....and sold by me to .....contains a minimum of—

..... per cent albuminoids.
..... per cent oil.
..... per cent carbohydrates.

Signature of seller.....

Date... . . . .19 ..

PRICES OF FERTILISERS AND FEEDING STUFFS.

For the sake of continuity, this Schedule of Prices and Unit Values is issued as formerly. Owing to abnormal conditions, the figures should not be used for the purposes to which similar figures were put in pre-war times.

For Season 1919.

SUPERPHOSPHATES.

The undernoted prices per unit and per ton for Superphosphates are maximum prices for the grades named as fixed by Government Orders. These prices increase monthly by 1s. 6d. per ton until the end of the season.]

Item to be Valued.	Maximum Prices per Unit for the undernoted Percentages. (The maximum price includes carriage to purchasers' nearest railway station.)				
Phosphates dissolved . .	From . . .	26 %	27 %	30 %	35 %
	To	27	28	31	36
	Unit price for	26·5	27·5	30·5	35·5
February unit price . . .	..	4/7⅜	4/6¾	4/4½	4/3⅜
May-June unit price . . .	..	4/9¾	4/8¾	4/6	4/5¼
February price per ton . .	..	£6 3 0	£6 5 6	£6 13 0	£7 13 0
May-June price per ton . .	..	6 7 6	6 10 0	6 17 6	7 17 6

FERTILISERS.
(Other than Superphosphates.)

Name of Fertiliser.	Guarantee.	Price per Ton.	Price per Unit.
	Per cent.	£ s. d.	
Sulphate of ammonia	20·2 Nitrogen	*16 15 0	16/7
Basic slag (Thomas-phosphate powder) .	T.P. 22	3 10 0	3/2½
	24	3 13 0	3/0½
	26	3 16 0	2/11
Bone meal	..	†16 0 0 to 18 0 0	
Steam bone flour	..	†13 0 0 to 16 0 0	
Ground mineral phosphate	60 Total phosphate	5 10 0	1/10
Nitrate of soda . . . . sold	15½ % N.	20 0 0	25/10
Potash manure salt . . . only	..	..	..
Muriate of potash . . . under	80 % KCl.	32 0 0	
Kainit (unpulverised) . . permit			
Compound fertilisers ‡—			
Nitrogen	..	..	17/6
Soluble phosphate	..	..	4/3
Citric soluble phosphate	..	..	2/6
Insoluble phosphate	..	..	1/6
Potash	..	..	21/6

At point of production.

* From 1st March to 31st May 1919.

* Sulphate of ammonia is carriage paid to purchaser's nearest railway station in two-ton lots net cash. For conditions as to price for small quantities and other conditions of sale of sulphate of ammonia and superphosphates, see the respective Orders.

† Four-ton lots *ex* warehouse.

‡ See Compound Fertilisers Order, 13th October 1917, for conditions of sale.

FEEDING STUFFS.

Maximum Prices of the undernoted Feeding Stuffs as fixed by the Cattle Feeding Stuffs (Maximum Prices) Order 1918, dated 7th February 1918 (for 2-ton lots *ex* warehouse).

Name of Feeding Stuff.	Maximum prices per Ton. £ s. d.	Name of Feeding Stuff.	Maximum prices per Ton. £ s. d.
Home manufactured cakes and meals—		Compound cakes and meals (made from two or more ingredients when no oil is expressed in the process of manufacture)—	
Linseed cake (not less than 8% oil)	19 0 0	Cakes and meals containing not less than 5% oil and not less than 20% albuminoids	18 10 0
Cotton seed cake	14 10 0		
Undecorticated ground nut cake	17 5 0		
Semi-decorticated ground nut cake	18 2 6		
Decorticated ground nut cake	19 0 0	Millers' offals—	
Palm kernel cake	13 15 0	Fine offals of all kinds	14 10 0
Rape cake	14 0 0	Coarse offals of all kinds	13 10 0
Copra cake	16 5 0	Fine barley dust	17 0 0
Sesame cake	18 10 0	Coarse barley dust	8 0 0
Soya cake	19 0 0	Oat dust	6 0 0
Extracted palm kernel meal	13 10 0	Oat husks	3 0 0
Extracted rape meal	14 0 0	Oat husk meal	5 0 0
Extracted soya meal	18 15 0		
Imported cakes and meals—		Miscellaneous—	
North American linseed cake	19 5 0	Malt culms	13 5 0
Argentine linseed cake	19 15 0	Kiln dust	11 0 0
Canadian linseed cake	19 10 0	Dried distillers' grains	15 5 0
Australian linseed cake	19 10 0	Dried brewers' ale grains	14 5 0
Spanish and Portuguese linseed cake	19 10 0	Dried brewers' porter and mixed grains	14 0 0
Egyptian cotton seed cake	15 0 0		
Decorticated cotton seed meal	19 15 0		
Decorticated cotton seed cake	19 15 0	Wet brewers' ale and distillers' grains for October-April delivery	Per usual Trade qr. 0 8 4
Repressed cotton cake	20 15 0		
Semi-decorticated cotton cake	17 10 0		
Copra cake	17 10 0	Wet brewers' porter and mixed grains for October-April delivery	0 7 10
Palm kernel cake	15 0 0		
Rangoon rice meal	16 10 0		
Italian rice meal	14 10 0	Wet brewers' ale and distillers' grains for May-September delivery	0 7 4
Canadian rice meal	17 0 0		
Egyptian rice meal	17 0 0		
Gluten feed	17 5 0	Wet brewers' porter and mixed grains for May-September delivery	0 6 10
Maize meal cake	17 5 0		
*Locust beans	22 0 0		

* Including sacks.

NOTE ON UNIT USED IN VALUING FERTILISERS.

The unit used for the valuation of fertilisers is the hundredth part of a ton, and as the analyses of fertilisers are expressed in parts per hundred, the percentage of any ingredient of a fertiliser when multiplied by the price of the unit of that ingredient represents the value of the quantity of it contained in a ton.

Note.—The units have reference solely to the MARKET PRICES of Fertilisers at 6th February 1918, and not to their AGRICULTURAL VALUES.

NOTE ON MAXIMUM PRICES OF FEEDING STUFFS.

The maximum prices quoted in the above table are for quantities of not less than 2 tons. For quantities less than 2 tons and more than 5 cwt. an additional charge may be made of 5s. per ton when goods are

delivered from a store not a maker's or importer's store. Additional charges are made for quantities less than 5 cwt. The maximum prices prescribed do not include transport charges. Transport charges are limited to the amount actually and properly paid or payable, not exceeding the customary charges. A charge on account of transport of raw materials allowed by the Food Controller may be made in the case of compound cakes and meals manufactured in Scotland or Ireland. These additional transport charges must be shown as separate items on the invoice. Feeding stuffs sold in sacks or bags shall be sold gross weight, sacks or bags included. If the purchaser, by arrangement with the seller, sends his own sacks or bags to be filled, he shall be entitled to receive the cattle feeding stuffs purchased net weight, sacks or bags excluded, and no charge for sacks or bags can be made.

All transactions are on a cash basis, *ex* mill or store or on rail within fourteen days. Where credit is given an extra charge may be made, provided that discount for net cash within fourteen days is quoted on the invoice, and that discount brings the net cash price within the maximum price prescribed.

Special provisions hold with respect to millers' offals. See the Cattle Feeding Stuffs (Maximum Prices) Order, 1918, dated 7th February 1918.

BOTANICAL DEPARTMENT

Consulting Botanist to the Society—A. N. M'Alpine,
6 Blythswood Square, Glasgow.

The Society have fixed the following rates of charge for the examination of plants and seeds for the *bona fide* and individual use and information of members of the Society (not being seedsmen), who are particularly requested, when applying to the Consulting Botanist, to mention the kind of examination they require, and to quote its number in the subjoined schedule. The charge for examination must be paid at the time of application, and the carriage of all parcels must be prepaid.

Scale of Charges.

1. A report on the purity, amount, and nature of foreign materials, and the germinating power of a sample of seed, 1s.
2. Determination of the species of any weed or other plant, or of any vegetable parasite, with a report on its habits and the means for its extermination or prevention, 1s.
3. Report on any disease affecting farm crops, 1s.
4. Determination of the species of any natural grass or fodder plant, with a report on its habits and pasture or feeding value, 1s.

The Consulting Botanist's Reports are furnished to enable members—purchasers of seeds and corn for agricultural or horticultural purposes—to test the value of what they buy, and are not to be used or made available for advertising or trade purposes by seedsmen or otherwise.

Purchase of Seeds.

The purchaser should obtain from the vendor, by invoice or other writing, the proper designation of the seed he buys, with a guarantee of the percentage of purity and germination, and of its freedom from ergot, and in the case of clover, from the seeds of dodder or broom-rape.

It is strongly recommended that the purchase of *prepared mixtures* of seeds should be avoided. The different seeds should be purchased separately and mixed by the farmer: mixtures cannot be tested for germination.

The Sampling of Seeds.

The utmost care should be taken to secure a fair and honest sample. This should be drawn from the bulk delivered to the purchaser, and not from the sample sent by the vendor.

When legal evidence is required, the sample should be taken from the bulk, and placed in a sealed bag in the presence of a witness. Care should be taken that the sample and bulk be not tampered with after delivery, or mixed or brought in contact with any other sample or bulk.

At least one ounce of grass and other small seeds should be sent, and two ounces of cereals and the larger seeds. When the bulk is obviously impure the sample should be at least double the amount specified. Grass seeds should be sent at least four weeks, and seeds of clover and cereals two weeks, before they are to be used.

The exact name under which the sample has been sold and purchased should accompany it.

Reporting the Results.

The Report will be made on a schedule in which the nature and amount of impurities will be stated, and the number of days each sample has been under test, with the percentage of the seeds which have germinated.

"Hard" clover seeds, though not germinating within the time stated, will be considered good seeds, and their percentage separately stated.

The impurities in the sample, including the chaff of the species tested, will be specified in the schedule, and only the percentage of the pure seed of that species will be reported upon; but the REAL VALUE of the sample will be stated. The Real Value is the combined percentages of purity and germination, and is obtained by multiplying these percentages and dividing by 100: thus in a sample of Meadow Fescue having 88 per cent purity and 95 per cent germination, 88 multiplied by 95 gives 8360, and this divided by 100 gives 83·6, the Real Value.

Selecting Specimens of Plants.

The whole plant should be taken up and the earth shaken from the roots. If possible the plants must be in flower or fruit. They should be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They should be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

Parcels or letters containing seeds or plants for examination (carriage or postage paid) must be addressed to Professor M'Alpine, Botanical Laboratory, 6 Blythswood Square, Glasgow.

ENTOMOLOGICAL DEPARTMENT

Consulting Entomologist to the Society—Dr R. Stewart MacDougall, 9 Dryden Place, Edinburgh.

Arrangements have been made with Mr R. Stewart MacDougall, M.A., D.Sc., Edinburgh, to advise members of the Society regarding insects or allied animals which, in any stage of their development, infest—

(*a*) Farm crops.
(*b*) Stored grain.
(*c*) Garden and greenhouse plants.
(*d*) Fruit and fruit trees.
(*e*) Forest trees and stored timber.
(*f*) Live stock (including poultry).

Members consulting Dr MacDougall will please forward with their queries examples of the injured plants, or the injured parts of plants, &c., as well as specimens of the insects or other animals believed to be the cause of the injury.

Specimens should be sent in tin or wooden boxes, or in quills, to prevent injury in transmission.

Address letters and parcels (carriage or postage paid) to Dr R. Stewart MacDougall, 9 Dryden Place, Edinburgh.

The Directors have fixed the fee payable by members to Dr MacDougall at 1s. for each case upon which he is consulted : this fee must be sent to him along with the application for information.

PREMIUMS

GENERAL REGULATIONS FOR COMPETITORS.

1. It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the writers whose papers are published in the 'Transactions.'

2. All reports must be legibly written, and on one side of the paper only; they must specify the number and subject of the Premium for which they are in competition; they must bear a distinguishing motto, and be accompanied by a sealed letter, similarly marked, containing the name and address of the reporter—initials must not be used.

3. No sealed letter, unless belonging to a report found entitled to the Premium offered, or a portion of it, will be opened without the author's consent.

4. Reports for which a Premium, or a portion of a Premium, has been awarded, become the property of the Society, and cannot be published in whole or in part, nor circulated in any manner, without the consent of the Directors. All other papers will be returned to the authors if applied for within twelve months.

5. The Society is not bound to award the whole or any part of a Premium.

6. All reports must be of a practical character, containing the results of the writer's own observation or experiment, and the special conditions attached to each Premium must be strictly fulfilled. General essays, and papers compiled from books, will not be rewarded or accepted. Weights and measurements must be indicated by the imperial standards.

7. The Directors, before or after awarding a Premium, shall have power to require the writer of any report to verify the statements made in it.

8. The decisions of the Board of Directors are final and conclusive as to all matters relating to Premiums, whether for Reports or at General or District Shows; and it shall not be competent to raise any question or appeal touching such decisions before any other tribunal.

9. The Directors will welcome papers from any Contributor on any suitable subject, whether included in the Premium List or not; and if the topic and the treatment of it are both approved, the writer may be remunerated and his paper published.

CLASS I.

REPORTS.

Section 1.—THE SCIENCE AND PRACTICE OF AGRICULTURE.

FOR APPROVED REPORTS.

1. On any useful practice in Rural Economy adopted in other countries, and susceptible of being introduced with advantage into Scotland—The Gold Medal. To be lodged by 1st November in any year.

The purpose chiefly contemplated by the offer of this premium is to induce travellers to notice and record such particular practices as may seem calculated to benefit Scotland. The Report to be founded on personal observation.

2. Approved Reports on other suitable subjects. To be lodged by 1st November in any year.

Section 2.—ESTATE IMPROVEMENTS.

FOR APPROVED REPORTS.

1. By the Proprietor in Scotland who shall have executed the most judicious, successful, and extensive Improvement—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

Should the successful Report be written for the Proprietor by his resident factor or farm manager, a Minor Gold Medal will be awarded to the writer in addition to the Gold Medal to the Proprietor.

The merits of the Report will not be determined so much by the mere extent of the improvements, as by their character and relation to the size of the property. The improvements may comprise reclaiming, draining, enclosing, planting, road-making, building, and all other operations proper to landed estates. The period within which the operations may have been conducted is not limited, except that it must not exceed the term of the Reporter's proprietorship.

2. By the Proprietor or Tenant in Scotland who shall have reclaimed within the ten preceding years not less than forty acres of Waste Land—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

3. By the Tenant in Scotland who shall have reclaimed within the ten preceding years not less than twenty acres of Waste Land —The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

4. By the Tenant in Scotland who shall have reclaimed not less than ten acres within a similar period—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The Reports in competition for Nos. 2, 3, and 4 may comprehend such general observations on the improvement of waste lands as the writer's

experience may lead him to make, but must refer especially to the lands reclaimed—to the nature of the soil—the previous state and probable value of the subject—the obstacles opposed to its improvement—the details of the various operations—the mode of cultivation adopted—and the produce and value of the crops produced. As the required extent cannot be made up of different patches of land, the improvement must have relation to one subject; it must be of profitable character, and a rotation of crops must have been concluded before the date of the Report. *A detailed statement of the expenditure and return* and a certified measurement of the ground are requisite.

5. By the Proprietor or Tenant in Scotland who shall have improved within the ten preceding years the Pasturage of not less than thirty acres, by means of top-dressing, draining, or otherwise, without tillage, in situations where tillage may be inexpedient—The Gold Medal, or Ten Sovereigns. To be lodged by 1st November in any year.

6. By the Tenant in Scotland who shall have improved not less than ten acres within a similar period—The Minor Gold Medal. To be lodged by 1st November in any year.

Reports in competition for Nos. 5 and 6 must state the particular mode of management adopted, the substances applied, the elevation and nature of the soil, its previous natural products, and the changes produced.

Section 3.—HIGHLAND INDUSTRIES and FISHERIES.

FOR APPROVED REPORTS.

1. The best mode of treating native Wool; cleaning, carding, dyeing, spinning, knitting, and weaving by hand in the Highlands and Islands of Scotland—Five Sovereigns. To be lodged by 1st November in any year.

Section 4.—MACHINERY.

FOR APPROVED REPORTS.

To be lodged by 1st November in any year.

Section 5.—FORESTRY DEPARTMENT.

FOR APPROVED REPORTS.

1. On Plantations of not less than eight years' standing formed on deep peat-bog—The Medium Gold Medal, or Five Sovereigns. To be lodged by 1st November in any year.

The premium is strictly applicable to deep peat or flow moss; the condition of the moss previous to planting, as well as at the date of the Report, should, if possible, be stated.

The Report must describe the mode and extent of the drainage, and the effect it has had in subsiding the moss—the trenching, levelling, or other preliminary operations that may have been performed on the surface—the mode of planting—kinds, sizes, and number of trees planted per acre—and their relative progress and value, as compared with plantations of a similar age and description grown on other soils in the vicinity.

CLASS II.

DISTRICT COMPETITIONS.

REGULATIONS 1919.

Grants in aid of DISTRICT COMPETITIONS *for* 1920 *must be applied for before* 1*st November* 1919, *on Forms to be obtained from the Secretary.*

When a Money Grant has expired, the District cannot apply again for another Money Grant for four years.

SECTION I.—GRANTS TO DISTRICT SOCIETIES FOR HORSES, CATTLE, SHEEP, AND PIGS.

1. CLASS OF STOCK—LIMIT OF GRANTS, £340.—The Highland and Agricultural Society will make Grants to District Societies for prizes for *Breeding Animals* of any of the following Classes of Stock, viz. :—

Cattle.	*Sheep.*
Shorthorn.	Blackface.
Aberdeen-Angus.	Cheviot.
Galloway.	Border Leicester.
Highland.	Half-Bred.
Ayrshire.	Shropshire.
British-Friesian.	Oxford-Down.
Jersey.	Suffolk.
Shetland.	Wensleydale.
Horses.	
Draught Horses.	*Pigs.*
Hunters.	Any Pure Breed.
Hackneys.	
Ponies.	
Shetland Ponies.	

Cross-bred[1] animals are not eligible. The Prizes must be confined to *Breeding* Animals; "bullocks," "geldings," "wethers," and "hog pigs" are excluded.

2. All Competitions must be at the instance of a local Society. A Committee of Management shall be appointed, and the Convener of the Committee must be a Member of the Highland and Agricultural Society.

3. GRANT TO DISTRICT, £12.—The portion of the Grant to any one District Society shall not exceed the sum of £12 in any one year.

4. ALLOCATION OF GRANT.—The Grant from the Highland and Agricultural Society is not to be applied as a Grant in aid of the Premiums offered by the Local Society, but must be offered in the form of separate Prizes for the Animals chosen; *and the Prizes must be announced in the Premium List and Catalogue of the Show as "given by the Highland and Agricultural Society."*

5. CONTINUANCE OF GRANT THREE YEARS.—The Money Grant shall continue for three alternate years, provided always that the District Society shall, in the two intermediate years, continue the competition by offering Premiums for the same class of Stock as that selected in each previous year to compete for the Highland and Agricultural Society's Prizes. If no competition takes place for two years the Grant expires.

[1] *Exceptions to this rule may, however, be authorised by the Board of Directors, on application. The Directors are prepared to consider applications from local Societies which desire to use their grants, or part thereof, as prizes for cross-bred calves and one-year-old cross-bred cattle.*

6. When it is agreed to hold the General Show of the Society in any district, no provincial show shall be held in that district in the months of June, July, or August.

7. Medals in Intermediate Years.—In the two alternate years the Highland and Agricultural Society will place three Silver Medals at the disposal of the District Societies, for the same classes of Stock as those for which the Money Premiums are offered, provided that not less than three lots are exhibited in the same class.

8. Rules of Competition.—The Rules of Competition for the Premiums, the Funds for which are derived from Grants of the Highland and Agricultural Society, shall be such as are generally enforced by the Society receiving the Grant for Premiums offered by itself.

9. Area and Parishes—Five Parishes.—When making application for Grants from the Highland and Agricultural Society, the District Society must delineate the area and the number of parishes comprised in the district, and, *except in special cases*, no District Society shall be entitled to a Grant whose show is not open to at least *five* Parishes.

10. Reports.—Blank Forms for Reports will be furnished to the Secretaries of the different District Societies. Both in the years when the Grant is offered and in the two intermediate years, detailed reports of the competition must be given on these Forms and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than 1st November. These reports are subject to the approval of the Directors of the Highland and Agricultural Society, against whose decision there shall be no appeal. All Reports must be signed and certified as marked in the Form.

11. Grants—When Paid.—The Grants made to District Societies will be paid in December after the Reports of the awards of the prizes have been received and found to be in order and passed by the Board of Directors, the Money Grants being paid to the Secretaries of the Local Societies and the Medals sent direct to the winners. *The Secretary of the District Society must not on any condition whatever pay any premium offered by the Highland and Agricultural Society until he has been informed that the awards are in order and has received the Grant from the Highland and Agricultural Society.*

12. Renewal of Application.—No application for renewal of a Money Grant to a District Society will be entertained until the expiration of *four years* from the termination of the last Grant.

13. Disposal of Applications.—In disposing of applications for District Grants, the Directors of the Highland and Agricultural Society shall keep in view the length of interval that has elapsed since the expiration of the last Grant, giving priority to those District Societies which have been longest off the list.

DISTRICTS.

Final Year.

1. Nithsdale Agricultural Society.—*Convener*, Charles W. Ralston, Dabton, Thornhill; *Secretary*, David Paterson, Solicitor, Thornhill. Granted 1909. (In abeyance in 1910 on account of the Dumfries Show.) (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)
2. Wester Ross Farmers' Club.—*Convener*, William Stirling, Fairburn, Muir of Ord; *Secretary*, James Cumming, County Buildings, Dingwall. Granted 1909. (In abeyance in 1911 on account of the Inverness Show.) (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)
3. Strathspey Farmers' Club.—*Convener*, J. Grant Smith, Strath-

spey Estate Office, Grantown-on-Spey; *Secretary*, Gilbert Brown, Grantown-on-Spey. Granted 1909. (In abeyance in 1911 on account of the Inverness Show.) (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)

4. Clackmannanshire Union Agricultural Society. — *Convener*, Donald A. Kinross, Hillend, Clackmannan; *Secretary*, Alexander L. Roxburgh, Solicitor, Alloa. Granted 1911. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)
5. Strathendrick Agricultural Society.—*Convener and Secretary*, W. Watson Murray, Catter House, Drymen. Granted 1911. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)
6. Doune Agricultural Association. — *Convener*, John Scrimgeour, Doune Lodge, Doune; *Secretary*, William Gray, Doune. Granted 1912. (In abeyance 1916, 1917, and 1918—no Show held.)
7. Cromar, Upper Dee, and Donside Agricultural Society.—*Convener*, William H. Coltman of Tillypoonie, Tarland; *Secretary*, William Anderson, Home Farm, Hopewell, Tarland. Granted 1915.

2nd Year.

8. Argyll Cattle Show Society.—*Convener*, Captain John Campbell of Kilberry; *Secretary*, James M'Dougall, South Cliff, Tarbert, Lochfyne. Granted 1910. (In abeyance in 1910—unable to hold a show. In abeyance in 1913 on account of the Paisley Show.) (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)
9. Castle-Douglas Agricultural Society. — *Convener*, Charles A. Phillips of Dildawn, Castle-Douglas; *Secretary*, Patrick Gifford, 118 King Street, Castle-Douglas. Granted 1912. (In abeyance 1912, 1915, 1916, 1917, and 1918—no Show held.)
10. Killearn Agricultural Society. — *Convener*, C. E. Horsburgh, Blairquhosh, Blanefield; *Secretary*, Robert N. Morrison, Dumgoyach, Blanefield, Stirlingshire. Granted 1914. (In abeyance 1916, 1917, and 1918—no Show held.)
11. Arran Farmers' Society.—*Convener*, James J. Morton, Machrie, Arran; *Secretary*, James Bone, jun., Glenkiln, Lamlash. Granted 1915. (In abeyance 1917 and 1918—no Show held.)
12. Carrick Farmers' Society.—*Convener*, Alexander Cross of Knockdon, Maybole; *Secretaries*, J. & J. M. Gibson, Royal Bank, Maybole. Granted 1915. (In abeyance 1917 and 1918—no Show held.)

1st Year.

13. Easter Ross Farmers' Club.—*Convener*, James G. Young, Cadboll, Fearn; *Secretary*, George D. Gill, Commercial Bank Buildings, Tain. Granted 1914. (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)
14. Forth Agricultural Society.—*Convener*, David M'Culloch, The Inn, Forth; *Secretary*, George Muir, East Crofthill, Carnwath. Granted 1915. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)
15. Mount Blair Agricultural Society. — *Convener*, James M'L. Marshall, Bleaton Hallet, Blairgowrie; *Secretaries*, J. Stewart and J. Mitchell, Bleaton, Blairgowrie. Granted 1915. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)
16. Buchlyvie and Gartmore Agricultural Society.—*Convener*, John Dempster, Estates Office, Gartmore; *Secretary*, James Monach, Craignorton, Buchlyvie. Granted 1916. (In abeyance 1916, 1917, and 1918—no Show held.)

17. Dumbartonshire Agricultural Society.—*Convener*, A. C. Lawrie, Muirhouses, Duntocher; *Secretary*, William Davie, 253 Main Street, Alexandria. Granted 1916. (In abeyance 1916, 1917, and 1918—no Show held.)
18. Poltalloch Farming Society.—*Convener*, Colonel Malcolm, C.B., of Poltalloch, Kilmartin; *Secretary*, Archibald Taylor, Poltalloch Estate Office, Kilmartin. Granted 1917. (In abeyance 1917 and 1918—no Show held.)

(In Intermediate Year—3 Silver Medals.)

19. Moffat and Upper Annandale Agricultural and Horticultural Society.—*Convener*, Basil H. Hill, Archbank, Moffat; *Secretaries*, James Johnstone, Solicitor, Moffat, and John Young, High Street, Moffat. Granted 1911. (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)
20. Glenkens Agricultural Society. — *Convener*, J. M. Kennedy, Knocknalling, Dalry; *Secretary*, James M'Gill, High Street, New Galloway. Granted 1911. (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)
21. Strathbogie Farmer Club. — *Convener*, William Wilson, Coynachie, Gartly; *Secretary*, William M. Morrison, Cairnie, Huntly. Granted 1912. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)
22. Islay, Jura, and Colonsay Agricultural Association.—*Convener*, ; *Secretary*, Robert Cullen, Bridgend, Islay. Granted 1912. (In abeyance in 1913 on account of the Paisley Show.) (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)
23. Formartine Agricultural Association.—*Convener*, George Walker, Tillygreig, Udny Station; *Secretary*, James Skinner, Mosstown Cottage, Logiereive, Udny. Granted 1913. (In abeyance 1916, 1917, and 1918—no Show held.)
24. Liddesdale Agricultural Society.—*Convener*, David Ballantyne, Shaws, Newcastleton; *Secretary*, Robert Brown, British Linen Bank, Newcastleton. Granted 1913. (In abeyance in 1914 on account of the Hawick Show.) (1915, 1916, 1917, and 1918—no Show held.)
25. Yarrow and Ettrick Pastoral.—*Convener*, Walter Barrie, Sundhope, Selkirk; *Joint-Secretaries*, Walter Barrie and John Johnstone, Sundhope, Selkirk. Granted 1913. (In abeyance in 1914 on account of the Hawick Show.) (1915, 1916, 1917, and 1918—no Show held.)
26. Ardoch Agricultural Society.—*Convener*, Robert Miller, Overardoch, Braco; *Secretary*, John Maxton, Rhynd, Braco, Perthshire. Granted 1914. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)
27. Ythanside Farmers' Club.—*Convener*, William Kemp, Aldie, Port Erroll; *Secretary*, Francis Gellie, Bank Agent, Ellon. Granted 1914. (In abeyance 1917 and 1918—no Show held.)
28. United Banffshire Agricultural Society.—*Convener*, Alexander Murray, Old Manse, Boyndie, Banff; *Secretary*, John A. Badenoch, 27 High Street, Banff. Granted 1915. (In abeyance 1916, 1917, and 1918—no Show held.)
29. Morayshire Farmer Club.—*Convener*, Gordon R. Shiach, Rosebrae, Elgin; *Secretary*, W. Rose Black, Solicitor, Elgin. Granted 1915. (In abeyance 1916, 1917, and 1918—no Show held.)

30. Lanarkshire Farmers' Society.—*Convener*, J. J. Storrar, Hamilton Estates Office, Hamilton; *Secretary*, James Cassels, Union Bank of Scotland, Hamilton. Granted 1915. (In abeyance 1916, 1917, and 1918—no Show held.)
31. Inverness-shire Farmers' Society.—*Convener*, P. B. Macintyre, Findon, Conon Bridge; *Secretary*, Fred. J. Baxter, Royal Bank Buildings, Inverness. Granted 1916. (In abeyance 1917 and 1918—no Show held.)
32. Upper Ward of Lanarkshire Agricultural Society.—*Convener*, David M'Culloch, Forth; *Secretary*, William Shaw, Royal Bank House, Lanark. Granted 1916. (In abeyance 1917 and 1918—no Show held.)

(In Abeyance 1919.)

33. United East Lothian Agricultural Society.—*Convener*, Thomas Elder of Stevenson Mains, Haddington; *Secretary*, John Stirling, Solicitor, Haddington. Granted 1911. (In abeyance in 1915, 1916, 1917, 1918, and 1919 on account of the Edinburgh Show.)
34. Dalkeith Agricultural Society.—*Convener*, Phipps O. Turnbull, Smeaton, Dalkeith; *Secretary*, James W. Speedy, Braeside, Liberton. Granted 1916. (In abeyance in 1916—no Show held.) (In abeyance in 1917, 1918, and 1919 on account of the Edinburgh Show.)

In 1919.

Nos. 1, 2, 3, 4, 5, 6, and 7 are in competition for the final year.
Nos. 8, 9, 10, 11, and 12 are in competition for the second year.
Nos. 13, 14, 15, 16, 17, and 18 are in competition for the first year.
Nos. 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32 are in intermediate year and compete for local Premiums. (See Rules 5 and 7.)
Nos. 33 and 34 are in abeyance on account of the Edinburgh Show.

Section 2.—GRANTS TO HORSE ASSOCIATIONS, &c., FOR STALLIONS FOR AGRICULTURAL PURPOSES.

1. The Highland and Agricultural Society will make Grants to Horse Associations and other Societies in different districts engaging Stallions for agricultural purposes. The total sum expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £210 in any one year.

2. The portion of the Grant to any one Association or Society shall not exceed the sum of £15 in any one year.

3. The Grant will be available only for Stallions which, for the year to which the Grant applies, are Registered in the Register of Certified Draught Stallions published by the Board of Agriculture. (For information regarding the Registration of Stallions, apply to the Secretary of the Board of Agriculture, 4 Whitehall Place, London, S.W.)

4. The Grant will continue for three years provided the Association receiving the Grant shall hire a Registered Stallion in the two intermediate years.

5. In the event of a Horse not being engaged in any one year while the provisions of the Grant are in force, the Grant made by the Highland and Agricultural Society will cease.

6. Rules 2 (Committee and Convener), 10 (Reports), 11 (Time of Payment), 12 (Renewal of Grant), and 13 (Disposal of Applications) applicable to Section 1, shall be applicable to this Section.

DISTRICTS.

Final Year.

1. Buchlyvie and Vale of Menteith Horse-Breeding Society.—*Convener and Secretary*, John Drysdale, 5 St Andrew Square, Edinburgh. Granted 1915.
2. Carse and Dundee District Stallion Society.—*Convener*, J. W. Colville, Leoch, Auchterhouse; *Secretary*, William Murray, Balruddery Farm, Invergowrie. Granted 1915.
3. Gigha Horse-Breeding Society.—*Convener*, W. J. Yorke Scarlett of Gigha, Argyllshire; *Secretary*, W. W. Philip, Estates Office, Gigha. Granted 1915.

2nd Year.

4. South Deeside Stock Improvement Society.—*Convener*, Robert Milne, Wester Durris, Drumoak; *Secretary*, John Duncan, Craiglug Cottage, Durris, Drumoak. Granted 1917.
5. Central Banffshire Farmers' Club.—*Convener*, George Cameron, Bogbain, Keith; *Secretaries*, Middleton & Weir, North of Scotland Bank, Moss Street, Keith. Granted 1917.
6. Glenkens and District Horse-Breeding Society.—*Convener*, Hugh Muirhead, Glenlair, Dalbeattie; *Secretary*, John Scott, Drumhumphry, Corsock, Dalbeattie. Granted 1917.
7. Kilfinan and Cowal Entire Horse Society.—*Convener*, Robert M. Reid, Toward Point, Toward; *Secretary*, Neil Nicolson, Auchgayle Farm, Millhouse, Kyles of Bute. Granted 1917.
8. Kirriemuir District Agricultural Society.—*Convener*, William Osler, Mearns, Kirriemuir; *Secretary*, J. A. Carnegie, Solicitor, Kirriemuir. Granted 1917.
9. Lauderdale and West of Berwickshire Agricultural Society.—*Convener*, George Runciman, Wantonwalls, Lauder; *Secretary*, George L. Broomfield, Lauder. Granted 1917.
10. Morayshire Clydesdale Horse-Breeding Society.—*Convener*, C. M. Bruce, Burgie Lodge Farm, Forres; *Secretary*, H. M. S. MacKay, 149 High Street, Elgin. Granted 1917.
11. Orkney West Mainland Horse-Breeding Society.—*Convener*, William T. Wood, Aikerness, Evie, Orkney; *Secretary*, David M. Leask, Howan, Dounby, Orkney. Granted 1917.

1st Year.

12. Mid-Argyll Agricultural Society.—*Convener*, Colonel G. W. Malcolm of Poltalloch, Kilmartin; *Secretary*, Archibald C. M'Diarmid, 48 Argyll Street, Lochgilphead. Granted 1919.
13. Dunblane, Doune, and Callander Horse-Breeding Society.—*Convener*, A. H. Anderson, Kippendavie, Dunblane; *Secretary*, William M'Laren, Drummore, Thornhill, Perthshire. Granted 1919.

Intermediate Year—Grant in Abeyance.

14. East Mainland Co-operative Horse-Breeding Society.—*Convener*, John Clouston, Graemeshall, Holm, Orkney; *Secretary*, Andrew Skea, Aikerskaill, Deerness, Orkney. Granted 1916.
15. Inverness District Horse-Breeding Society.—*Convener*, Alexander Munro, Well of Inshes, Inverness; *Secretary*, William R. Ross, Milton of Culloden, Inverness. Granted 1916.

16. Kintyre Horse-Breeding Society.—*Convener*, John Gemmell, Argyll Street, Campbeltown; *Secretary*, Malcolm Black, Estate Office, Campbeltown. Granted 1916.
17. Lorn Clydesdale Horse Society.—*Convener*, T. Martin Macdonald of Dargaillan, Taynuilt; *Secretary*, Hugh M'Innes, Glenshellach, Oban. Granted 1918.
18. Nairnshire Farming Society.—*Convener*, Alexander Campbell, Viewhill, Gollanfield; *Secretary*, D. M. Symon, Milton of Moyness, Auldearn. Granted 1918.
19. Scottish Central Horse-Breeding Society.—*Convener*, James Sands, Greenfoot, Gargunnock; *Secretary*, William Carrick, The Baad, Stirling. Granted 1918.
20. Lammermoor Pastoral Society.—*Convener*, Walter Elliot, Harehead, Duns; *Secretary*, Thomas Stephenson, Chapel, Duns Granted 1918.
21. Upper Ward of Lanarkshire Agricultural Society.—*Convener*, George Findlater, Jerviswood, Lanark; *Secretary*, William Shaw, Royal Bank of Scotland, Lanark. Granted 1918.

In 1919.

Nos. 1, 2, and 3 are in competition for the final year.
Nos. 4, 5, 6, 7, 8, 9, 10, and 11 are in competition for the second year.
Nos. 12 and 13 are in competition for the first year.
Nos. 14, 15, 16, 17, 18, 19, 20, and 21 are in abeyance, and compete for local premiums. (See Rule 4.)

SPECIAL GRANTS.

Annual.

£40 to the Highland Home Industries Association.—*Secretary*, Miss Jessie D. C. Ross, Riverfield, Inverness. Granted 1895. (Did not hold a competition in 1899, 1900, 1908, 1914, 1915, 1916, 1917, or 1918.)

£20 to the Ayrshire Agricultural Association, to be competed for at the Dairy Produce Show at Kilmarnock.—*Convener*, James Middleton, Estate Office, Braehead, Kilmarnock; *Secretary*, John Howie, 58 Alloway Street, Ayr. Granted 1872. (No competition 1914, 1915, 1916, 1917, and 1918.)

The British Dairymaids' Association.—*Convener*, Mrs J. H. R. Turnbull, 7 W. Maitland Street, Edinburgh; *Secretary*, Miss A. H. Smith, 12 Grassmarket, Edinburgh. 1 Minor Gold Medal and 1 Medium Silver Medal for Champion Butter-making Competitions. Granted 1908. (In abeyance 1914, 1915, 1916, 1917, and 1918—no competition.)

In Alternate Years.—Grant in 1919.

£5 to Shetland Agricultural Society.—*Convener*, J. M. Goudie, Lerwick; *Secretary*, James J. Brown, Lerwick. Granted 1893. (In abeyance—no Show in 1914, 1915, 1916, 1917, or 1918.) (Grant in 1919.)

£3 to Orkney.—*Convener*, James Johnston, Orphir House, Orphir, Orkney; *Secretary*, D. B. Peace, jun., Auctioneer, Kirkwall. Granted 1883. (No Show in 1915, 1916, 1917, and 1918.) (Grant in 1919.)

£3 to Sanday, Orkney.—*Convener*, W. Cowper Ward, Scar House, Sanday, Orkney; *Secretary*, James Irvine, Stove Farm, Sanday, Orkney. Granted 1902. (In abeyance 1915, 1916, 1917, and 1918—no Show held.) (Grant in 1919.)

£3 to North Uist Agricultural Society.—*Convener*, Dr M. T. Mackenzie, J.P., Scolpaig, North Uist; *Secretary*, H. H. Mackenzie, J.P., Balelone, Lochmaddy. Granted in 1915 for 3 alternate years. (In abeyance 1915, 1916, 1917, and 1918—no Show held.) (Grant in 1919.)

£3 to East Mainland, Orkney.—*Convener*, John Clouston, Graemeshall, Holm, by Kirkwall; *Secretary*, Alexander Calder, Seabay, Tankerness, Kirkwall. Granted 1898. (In abeyance 1917 and 1918—no Show held.) (Grant in 1919.)

£3 to West Mainland, Orkney.—*Convener*, ; *Secretary*, George Learmonth, Pow, Quoyloo, by Stromness, Orkney. Granted 1900. (No Show 1916, 1917, or 1918.) (Grant in 1919.)

Ross-shire Crofters' Show.—*Convener*, Major T. W. Cuthbert, C.M.G., D.S.O., Achindunie, Alness; *Secretary*, Robert Calder, Commercial Bank House, Alness. Granted 1910 for 3 alternate years, and 2 Silver Medals in the 2 intermediate years, which may be awarded to animals of any pure breed or cross. (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.) Medals in 1919.

DONATIONS, 1919.

£25 Scottish Horticultural Association—Exhibition of Potatoes.

£15 Scottish Women's Rural Institutes (Lothian Federation).

Dalkeith Agricultural Society.—*Convener*, Phipps O. Turnbull, Smeaton, Dalkeith; *Secretary*, James W. Speedy, Braeside, Liberton. 2 Silver Medals for competition at Foal Show, 1919.

GRANT IN ABEYANCE, 1919.

£3 to Rousay, Orkney. *Convener*, John Logie, Trumbland, Rousay, Orkney; *Secretary*, John Harrold, Springfield, Rousay. Granted 1903. (No Show 1915, 1916, 1917, or 1918.)

£3 to South Ronaldshay and Burray, Orkney.—*Convener*, Archibald Allan, St Margaret's Hope, Orkney; *Secretary*, George Esson, St Margaret's Hope, Orkney. Granted 1904. (In abeyance 1917 and 1918—no Show held.)

£3 to Unst, Shetland.—*Convener*, Alexander M. Sandison, Moundeville Uyasound, Shetland; *Secretary*, Thomas G. Hunter, Clivocast, Uyasound, Unst. Granted 1911 for 3 alternate years. (No Show 1914, 1915, 1916, 1917, or 1918.)

MEDALS IN AID OF PREMIUMS GIVEN BY LOCAL SOCIETIES.

The Society, being anxious to co-operate with local Associations, will give a limited number of Silver Medals annually to Societies, not on the list of Cattle, Horse, or Sheep Premiums, in addition to the Money Premiums awarded in the Districts, for—

1. Best Bull, Cow, or Heifer of any pure breed included in Section 1.
2. Best Stallion, or Mare of any pure breed included in Section 1.
3. Best Tup, or Pen of Ewes of any pure breed included in Section 1.
4. Best Boar, Sow, or Breeding-Pig of any pure breed.
5. Best Pens of Poultry.
6. Best Sample of any variety of Wool.
7. Best Sample of any variety of Seeds.
8. Best managed Farm.

9. Best managed Green Crop.
10. Best managed Hay Crop.
11. Best managed Dairy.
12. Best Sweet-Milk Cheese.
13. Best Cured Butter.
14. Best Fresh Butter.
15. Best collection of Roots.
16. Best kept Fences.
17. Male Farm Servant who has been longest in the same service, and who has proved himself most efficient in his duties, and to have invariably treated the animals under his charge with kindness.
18. Female Servant in charge of Dairy and Poultry who has been longest in the same service, and who has proved herself most efficient in her duties, and to have invariably treated the animals under her charge with kindness.
19. Best Sheep-Shearer.
20. Most expert Hedge-Cutter.
21. Most expert Labourer at Draining.
22. Best Maker of Oat-Cakes.

It is left to the local Society to choose out of the foregoing list the classes for which the Medals are to be competed.

The Medals are granted for two years, and lapse if not awarded in those years.

No Society shall receive more than two Medals in any year.

Aberdeenshire.

1. Marnoch and Cornhill Agricultural Society.—*Convener*, James Andrew, Kinnairdy Castle, Bridge of Marnoch; *Secretary*, David Findlay, Bank Agent, Aberchirder. 2 Medals. 1914. (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)
2. New Deer Agricultural Society.—*Convener*, David M. Godsman, Mains of Fedderate, Maud; *Secretary*, P. Crighton, New Deer. 2 Medals. 1914. (In abeyance 1914, 1916, 1917, and 1918—no Show held.)
3. Vale of Alford Agricultural Association.—*Convener*, William A. Mitchell, Auchnagathle, Whitehouse, Aberdeen; *Secretary*, W. Alexander Ronald, East Cevidley, Keig, Whitehouse. 2 Medals. 1915. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)
4. Turriff Agricultural Association.—*Convener*, James Durno, Rothiebrisbane, Fyvie; *Secretary*, J. N. Ritchie, Turriff. 2 Medals. 1916. (In abeyance 1917 and 1918—no Show held.)
5. Upper Donside Agricultural Association.—*Convener*, William A. Spark, Glenbuckat, Aberdeenshire; *Secretary*, Walter Beattie, Corbanchory, Cushnie, Alford. 2 Medals. 1916. (In abeyance 1917 and 1918—no Show held.)

Argyllshire.

6. Mull and Morvern Agricultural Society.—*Convener*, J. H. Munro Mackenzie of Calgary, Mull; *Secretary*, Alexander J. Fraser, Clydesdale Bank, Tobermory. 2 Medals. 1913. (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)

Ayrshire.

7. Beith Farmers' Society.—*Convener*, David Kerr, Marshalland, Beith; *Secretary*, Matthew Gilmour, Clydesdale Bank, Beith. 2 Medals. 1916. (In abeyance 1916, 1917, and 1918—no Show held.)

Banffshire.

8. Northern Seeds and Roots Association.—*Convener*, George Smith, Ordens, Boyndie, Banff; *Secretary*, A. Bannerman Robb, Seafield Street, Portsoy. 2 Medals. 1914. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)
9. Aberdour and North-East Agricultural Society.—*Convener*, Alexander Beddie, Bridgend, Fraserburgh; *Secretary*, Robert Pittendrigh, jun., Newseat, Fraserburgh. 2 Medals. 1915. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)

Caithness.

10. Caithness Agricultural Society.—*Convener*, D. P. Henderson of Stemster, Halkirk; *Secretary*, George Harrold, Accountant, Wick. 2 Medals. 1914. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)

Dumfriesshire.

11. Sanquhar Farmers' Society.—*Convener*, James Moffat, Gateside, Sanquhar; *Secretary*, W. M. Henderson, Solicitor, Sanquhar. 2 Medals. 1914. (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)

Fifeshire.

12. Fife Agricultural Society.—*Convener*, David Ferrie, of Parbroath, Cupar; *Secretary*, F. W. Christie, Eden View, Cupar-Fife. 2 Medals. 1914. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)

Lanarkshire.

13. Shotts Calderwater Farmers' Society.—*Convener*, John Weir, Shottsburn, Holytown; *Secretary*, Alexander Waddell, 49 Wesleyan Street, Glasgow. 2 Medals. 1916. (In abeyance 1916, 1917, and 1918—no Show held.)

Orkney.

14. Shapansey Agricultural Association.—*Convener*, James Johnston of Coubister, Orphir House, Orphir, Orkney; *Secretary*, William Robertson, Elwickbank, Shapansey, Orkney. 2 Medals. 1915. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)

Perthshire.

15. Moulin Agricultural Association.—*Convener and Secretary*, Robert M'Gillewie, Dunkeld. 2 Medals. 1913. (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)
16. Dunblane Agricultural Society.—*Convener*, A. H. Anderson, J.P., Kippendavie Estate Office, The Firs, Dunblane; *Secretary*, John Stewart, Solicitor, Dunblane. 2 Medals. 1916. (In abeyance 1916, 1917, and 1918—no Show held.)

Stirlingshire.

17. Denny and Dunipace Agricultural Association.—*Convener*, William Chapman, Bank of Scotland, Denny; *Secretary*, Alexander Henry, Solicitor, 30 Glasgow Road, Denny. 2 Medals. 1915. (In abeyance 1916, 1917, and 1918—no Show held.)

Applications from other Districts must be lodged with the Secretary of the Society *by 1st November next.*

RULES OF COMPETITION.

1. All Competitions must be at the instance of a local Society.
2. The classes for which Medals are granted must be in accordance with the list at page 53. The Committee shall select the classes, and specify them in the Report.
3. A Committee of Management shall be appointed, and the Convener of the Committee must be a Member of the Highland and Agricultural Society.
4. The Money Premiums given in the District must be not less than £2 for each Medal claimed.
5. The Medal for Sheep-Shearing shall always accompany the highest Money Premium.
6. There must not be fewer than three competitors in all the classes.
7. Regarding Reports, despatch of Medals, and application for renewal of Grant, Rules 10 and 11, Section I., will apply.
8. When a grant of Medals has expired, the District cannot apply again for Medals for two years.

PLOUGHING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first Premium at Ploughing Competitions, provided a Report in the following terms on the official form is made to the Secretary, within one month of the Competition, by a Member of the Society. Forms of Report to be had on application.

FORM OF REPORT.

I, of , Member of the Highland and Agricultural Society, hereby certify that I attended the Ploughing Match of the Association at in the county of on the when ploughs competed; of land were assigned to each, and hours were allowed for the execution of the work. The sum of £ was awarded in the following proportions, viz. :—

[*Here enumerate the names and designations of successful Competitors.*]

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Ploughing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.
2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society, 3 George IV. Bridge, Edinburgh.
3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.
4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.
5. A Member can only report one Match; and a Ploughman cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal there must have been twelve ploughs in Competition, and not less than Three Pounds awarded in Prizes by the local Society. The Medal to be given to the winner of the first prize.

7. The Local Committee or Society may, if they desire, arrange to let each ploughman have one person to guide the horses for the first two and the last two furrows, but in no case shall ploughmen receive any other assistance, and their work must not be set up nor touched by others. Attention should be given to the firmness and sufficiency of the work below more than to its neatness above the surface.

8. The Local Committee is required to fix the time to be allowed for ploughing the portion of land, and they are recommended that the time be at the rate of not more than ten hours per imperial acre on light land, and fourteen hours on heavy or stony land.

HOEING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first Premium at Hoeing Competitions, provided a Report in the following terms on the official form is made to the Secretary within a month of the Competition by a Member of the Society. Forms of Report to be had on application.

RULES OF COMPETITION.

1. All Matches must be at the instance of a local Society or Hoeing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society, No. 3 George IV. Bridge, Edinburgh.

3. Not more than one match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.

5. A Member can only report one Match ; and same Competitor cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal there must have been twelve hoes in Competition, and not less than Three Pounds awarded in prizes by the local Society. The Medal to be given to the winner of the first prize.

7. The time to be allowed to be decided by the local Committee, but in no case to exceed two hours for two drills of 100 yards each, the third drill being unoccupied, so that Competitors do not interfere with their neighbour's work.

8. Competitors must finish their work as they go along—no turning back or after-dressing allowed. Handpicking or transplanting shall be strictly prohibited.

9. A Committee shall be appointed to watch the work, and any Competitor found transplanting or otherwise not complying with the Rules shall have his number withdrawn, and be debarred from receiving any prize which might otherwise have been awarded to him.

NOTE.—Medals will be awarded under similar conditions for Competitions in hand-singling.

LONG SERVICE CERTIFICATES AND MEDALS.

Certificates and Medals for long service are awarded by the Society to farm servants, male or female, having an approved service of not less than thirty years—(*a*) with one employer on the same or different holdings; (*b*) on the same holding with different employers. These Certificates and Medals will be issued as applications are received.

Forms to be obtained from the Secretary.

CLASS III.

COTTAGES AND GARDENS.

The following Premiums are offered for Competition in the Parishes after mentioned.

The Premiums are granted for two years.

PREMIUMS FOR BEST KEPT COTTAGES AND GARDENS.

1.	Best kept Cottage	£1	0 0
	Second best	0	10 0
2.	Best kept Cottage Garden	1	0 0
	Second best	0	10 0

RULES OF COMPETITION.

1. Competitions may take place in the different parishes for Cottages and Gardens, or for either separately.

2. The occupiers of Lodges at Gentlemen's Approach Gates and Gardeners' Houses are excluded, as well as others whom the Committee consider, from their position, not to be entitled to compete. The inspection must be completed by the 1st of October. In making the inspection, the Conveners may take the assistance of any competent judges.

3. It is left to the Committee of the District to regulate the maximum annual rent of the Cottages, which may, with the garden, be from £5 to £7.

4. To warrant the award of full Premiums, there must not be fewer than three competitors in each class. If there are less than three competitors in each class, only half Premium will be awarded.

5. A person who has gained the highest Premium cannot compete again.

6. If the Cottage is occupied by the proprietor, the roof must be in good repair; if the roof is thatch, it must be in good repair, though in the occupation of a tenant. The interior and external conveniences must be clean and orderly; the windows must be free of broken glass, clean, and affording the means of ventilation. Dunghills, and all other nuisances, must be removed from the front and gables. In awarding the Cottage Premiums, preference will be given to Competitors who, in addition to the above requisites, have displayed the greatest taste in ornamenting the exterior of their houses, and the ground in front and at the gables.

7. In estimating the claims for the Garden Premiums, the judges should have in view—the sufficiency and neatness of the fences and walks; the cleanness of the ground; the quality and choice of the crops; and the general productiveness of the garden.

8. Reports, stating the number of Competitors, the names of successful parties, and the nature of the exertions which have been made by them, must be lodged with the Secretary of the Highland and Agricultural Society *on or before the 1st November next.*

9. When a grant of Money has expired, the District cannot apply again for aid for four years.

Parishes desirous of these Premiums must lodge applications with the Secretary *on or before the 1st November next.*

(*No Money Grants offered in* 1918.)

MEDALS FOR COTTAGES AND GARDENS, OR GARDEN PRODUCE, POULTRY, AND BEE-KEEPING.

1. The Society will give annually one or two Minor Silver Medals to a limited number of local Associations or individuals, who establish Competitions and Premiums for Cottages, Gardens, Garden Produce, or Bee-Keeping. The Medals will be granted for two years.

2. The Medals may be offered in any two of the following sections, *but under no circumstances will the two Medals be given in one of the sections:—*

(1) Best kept Cottage or best kept Cottage and Garden. (One Medal only.)

(2) Best kept Garden. (One Medal only.)

(3) Best Collection of Garden Produce—Flowers excluded. (One Medal only.)

(4) Best Pen of Poultry.

(5) Honey. (One Medal only.)

3. The annual value of each Cottage, with the ground occupied in the parish by a Competitor, must not exceed £15. The occupiers of Lodges at Gentlemen's Approach Gates, and Gardeners in the employment of others, are not entitled to compete.

4. If Competition takes place for Garden Produce, such produce must be *bona fide* grown in the Exhibitor's Garden. He will not be allowed to make up a collection from any other Garden. The produce must consist of Vegetables, or Vegetables and Fruit (not Fruit alone). Flowers are excluded.

5. The Honey must be the produce of the Exhibitor's own Hives.

6. To warrant the award of a Medal, there must not be fewer than three Competitors.

7. Blank forms for Reports of Competitions will be furnished to the Secretaries of the different Districts. These must, in all details, be completed and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than 1*st November*, for the approval of the Directors, against whose decisions there shall be no appeal.

8. When a grant of Medals has expired, the District cannot apply again for aid for two years, and if no competition takes place in a District for two years the grant expires.

9. Applications for these Medals must be made *before 1st November next.*

Aberdeenshire.

1. Cruden Horticultural Society.—*Convener*, Robert Brand, Ardiffery, Hatton, R.S.O., Aberdeen; *Secretary*, John Hendry, Hatton, R.S.O., Aberdeen. 2 Medals. 1913. (In abeyance 1914, 1915, 1916, 1917, and 1918—no Show held.)

2. Kinellar Horticultural and Poultry Show.—*Convener*, W. S. Cantlay, Glasgoego Cottage, Kinellar; *Secretary*, Neil Smith, Kinellar. 2 Medals. 1914. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)

Fifeshire.

3. Newburgh Gardening Society.—*Convener*, Andrew Kay, Hillside Cottage, Newburgh; *Secretary*, David M. Adamson, High Street, Newburgh. 2 Medals. 1916. (In abeyance 1916, 1917, and 1918—no Show held.)
4. Letham and District Horticultural Society.—*Convener*, J. W. Storrar, Melville Home Farm, Collessie; *Secretary*, W. A. Penman, Schoolhouse, Collessie. 2 Medals. 1919.

Perthshire.

5. Braco Horticultural Society.—*Convener*, John W. Stirling, J.P., Braco; *Secretary*, William M'Ildowie, Crofthead, Braco. 2 Medals. 1915. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)

Renfrewshire.

6. Inverkip, Wemyss Bay, and Skelmorlie Horticultural Society.—*Convener and Secretary*, Robert H. Hamilton, Clydesdale Bank, Skelmorlie. 2 Medals. 1914. (In abeyance 1915, 1916, 1917, and 1918—no Show held.)

NOTE.—From 3rd till 10th July all communications should be addressed to "The Secretary, Secretary's Office, Showyard, Edinburgh."

Address for Telegrams—"SOCIETY," EDINBURGH.
Telephone No.—CENTRAL 3655.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

GENERAL SHOW OF STOCK AND IMPLEMENTS

EDINBURGH

8TH, 9TH, 10TH, AND 11TH JULY 1919.

LAST DAYS OF ENTRY.

IMPLEMENTS AND OTHER ARTICLES—Monday, 5th May.
CATTLE, HORSES, SHEEP, AND PIGS—Thursday, 29th May.
GOATS, POULTRY, DAIRY PRODUCE, BEE APPLIANCES, HONEY, AND WOOL (separate Forms)—Thursday, 29th May.

No Entry at ordinary fees taken later than those which are received at the Society's Office, Edinburgh, by first post, or 10 o'clock, on Friday morning (30th May). Late Entries for Cattle, Horses, Sheep, Goats, and Pigs taken on payment of 10s. additional for each entry (Poultry, Dairy Produce, Bee Appliances, Honey, and Wool at double fees) till Wednesday morning (4th June) at the Society's Office, Edinburgh, at 10 o'clock.

President of the Society.

THE RIGHT HON. THE EARL OF ROSEBERY, K.G., K.T.

Chairman of the Board of Directors.

CHARLES DOUGLAS, D.Sc., C.B., OF AUCHLOCHAN.

Convener of the Local Committee.

SIR ARCHIBALD BUCHAN-HEPBURN OF SMEATON, BART.

The District connected with the Show comprises the Counties of Mid-Lothian, East Lothian, and West Lothian.

REGULATIONS.

GENERAL CONDITIONS.

1. The Competition, except where otherwise stated in the Premium List, is open to Exhibitors from all parts of the United Kingdom.

2. Every Lot must be intimated by a Certificate of Entry, lodged with the Secretary *not later than Monday, 5th May, for Implements and other Articles, and Thursday, 29th May, for Stock, Poultry, and Dairy Produce, &c.* No Entry taken at ordinary fees later than those which are received at the Society's Office by first post, or 10 o'clock, on Friday morning, 30th May. Late Entries for Cattle, Horses, Sheep, Goats, and Pigs taken on payment of 10s. additional for each entry (Poultry, Dairy Produce, Bee Appliances, Honey, and Wool at double fees) till Wednesday morning (4th June), at the Society's Office, Edinburgh, at 10 o'clock. Printed forms of Entry will be issued on application to the Secretary, No. 3 George IV. Bridge, Edinburgh. Admission Orders for Exhibits and Attendants will be forwarded to Exhibitors, by post, previous to the Show. *Entries.*

3. This Premium List is published and the Show will be held subject to any Orders that may be issued by the Board of Agriculture or Local Authorities. Any licences that may be required for the movement of Stock into or away from the Show must be obtained by Exhibitors. For these licences, application should be made to the Chief Constable, Edinburgh. *Licences for moving Stock.*

4. Animals suffering from any form of infectious or contagious disease —including ringworm or other form of infectious or contagious skin ailment—must not be brought to the Show. Those infringing this Rule shall be liable to a fine of 40s., and to have their Stock removed. *Diseased Animals.*

5. No Entry can be received or recorded unless it is accompanied by the necessary fees, and complies fully with the Regulations in the Premium List, the Secretary being empowered to return entries sent without the necessary fees. *Fees to accompany Entries.*

6. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor. The Society shall have power at any time to call upon an Exhibitor to furnish proof of the correctness of any statement in his entry. *Particulars of Entries.*

7. The name of the Breeder, if known, must be given, and if the Breeder is not known, a declaration to that effect, signed by the Exhibitor, must be made on the Entry Schedule, and no pedigree will be entered in the Catalogue when the Breeder is unknown. *Name of Breeder.*

8. All animals, except calves, foals, and lambs shown with their dams, must be entered in the classes applicable to them, and cannot be withdrawn after entry, or other animals be substituted in their place. *No substitution of Animals.*

9. For prizes given by the Society, no animal shall be allowed to compete in more than one class, or to compete in any class except that prescribed for animals of its pedigree and description; but this Rule does not apply to the Jumping and Harness Classes. *One Class only.*

10. All stock exhibited at the Show, except where otherwise stated in the Premium List, must be, at the time of entry, the *bona fide* property of the Exhibitor in whose name it is entered. *Ownership.*

11. Exhibitors are alone responsible for the accuracy and eligibility of their entries. The recording of an entry or the admission of the exhibit to the Showyard will not relieve the Exhibitor of this responsibility. The entry-fee paid for an animal entered in a class for which it is not eligible is not returnable. *Responsibility for Entries.*

Society not liable. 12. The Society shall not be liable for any loss or damage which Stock, Poultry, Dairy Produce, &c., Implements, or other articles may sustain at the Show, or in transit.

Disqualified Exhibitors. 13. The Society reserve to themselves the right of refusing, cancelling, or prohibiting the exhibition of entries from any person who, after 1st January 1904, has been expelled from the membership of any Agricultural or Dairy Society, or who may have been prohibited, suspended, or disqualified from making entries or exhibiting at the Show or Shows of any Agricultural or Dairy Society or Breed Society in consequence of having attempted to obtain a Prize by giving a false Certificate, or by other unfair means, or who is under exclusion from any Breed Society for fraudulent practices.

Animal Disqualified. 14. When an animal has previously been disqualified by the decision of any Agricultural or Breed Society in the United Kingdom, such disqualification shall attach, if the Exhibitor, being aware of the disqualification, fail to state it, and the grounds thereof, in his entry, to enable the Directors to judge of its validity.

Tampering with Animals. 15. Any artificial contrivance or device of any description found on or proved to have been used on an animal, either for preventing the flow of milk or for any other improper purpose, will disqualify that animal from being awarded a Premium, and the Owner of said animal may be prohibited from again entering Stock for any of the Society's General Shows, for such a period as the Directors may see fit.

Blindfolding Horses. 16. Horses shall not be blindfolded while being shown in the Ring.

Rejecting Entries. 17. The Society further reserve to themselves the right of refusing any entries they may think fit to exclude, or to cancel any entry made, or to prohibit the exhibition of any entry.

Control of Exhibits. 18. Stock entered for competition, and actually in the Show, is subject to the control and under the orders of the Stewards, Secretary, and other Show officials of the Society, and such stock may not be withdrawn from competition without the consent of the Stewards or Secretary.

Improper Conduct. 19. Persons making insulting remarks to, or in any way unduly interfering with, the Judges, Stewards, or other officials while in the performance of their duties, and all Exhibitors or others in charge of stock while in the judging rings refusing to accept or display tickets, rosettes, &c., awarded by the Judges, and handed to them by the Stewards or other officials, or tearing up tickets, rosettes, &c., so awarded and handed to them, or indulging in any similar conduct, shall be considered guilty of misconduct, and shall be dealt with under these rules.

Subject to Orders. 20. All persons in charge of stock or other exhibits, and all persons admitted into the Showyard, shall be subject to the rules of the Society, and shall obey the orders of the Stewards, Secretary, and other officials of the Society. Exhibitors shall be answerable for the conduct of their servants or representatives.

Power of Officials. 21. The Stewards and other officials have power to enforce the regulations of the Society in their different departments.

Protests. 22. A protest having reference to exhibits at the Show may be lodged by any person having interest. Protests having reference to competitions which take place on the first day of the Show must be lodged in writing with the Secretary at his Office in the Showyard not later than 9 A.M. on Wednesday, the second day of the Show, and parties must be in attendance at the Secretary's Office in the Showyard at 9.30 A.M. that day, when protests may be disposed of. Protests relating to competitions taking place after the first day of the Show must be lodged before 5 P.M. on the day on which the particular exhibition takes place. Each protest must state specifically the grounds of objection, and must be accompanied by a deposit of £2, 2s., which deposit may, if the objection be proved frivolous to the satisfaction of the Directors, be forfeited. Protests may be lodged at any time by Directors,

and in this case no deposit will be required. Protests will be heard and determined by the Directors. Protests on veterinary grounds not received.

Penalties for Offences.

23. The violation of any one of the regulations, or disobedience of the orders of the Directors, Stewards, Secretary, or other officials of the Society, shall render the offending person liable to the forfeiture of all premiums awarded to him, or of such a portion as the Directors may ordain, and also liable to be expelled from the membership of the Society, and disqualified from again, or for a certain number of years, exhibiting at the Shows of the Society, or to have his case disposed of by fine or otherwise as the Directors may determine.

Final Authority.

24. The decision of the Directors shall, in every matter arising at or in connection with the Show, be final; and every person present at the Show, whether as a Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have agreed to refer the subject-matter of such decision to the final determination of the Directors to the exclusion of all Courts of Law.

Intimating Decisions.

25. All decisions under these rules may, along with the names and addresses of the persons against whom such decisions have been pronounced, be communicated by the Secretary of this Society to the Secretaries of all Agricultural or Dairy Societies holding open Shows in the United Kingdom, and to the Secretaries of all Breed Societies in the United Kingdom, and may be published in the Annual Reports of this Society, and in such newspapers or journals as the Directors may determine; and every Exhibitor competing at the Show, and every person present at the Show, whether as a Director, Member of Committee, Steward, Judge, Exhibitor, Visitor, or otherwise, shall be deemed thereby to have consented to such communication and publication.

Former Winners.

26. An animal to which a first Premium has been awarded, even if it should not qualify for that Premium, or an animal which subsequently becomes entitled to a first Premium, at a General Show of the Society, cannot again compete in the same class, notwithstanding any alteration in the heights stated for such class, but may be exhibited as Extra Stock.

Herd-books.

27. Shorthorn, Aberdeen-Angus, Galloway, Highland, and British Friesian cattle must be entered in the herd-books—Ayrshire Cattle in the herd-book or any Appendices thereto—or the Exhibitor must produce evidence that his animal is eligible to be entered therein.

Height of Horses.

28. All Horses or Ponies entered in classes in which a particular height is stated shall, before being judged, be measured with their shoes on. No subsequent measuring or alteration of shoes will be permitted.

Weight of Shoes.

29. Exhibitors of Hackney and Harness Horses shall be required to adhere to the Rules and Regulations of the Hackney Horse Society with regard to the weight of shoes on their exhibits, the Society's Veterinary Inspector being instructed to examine all the Hackneys and Harness Horses on the opening morning of the Show, and see that the following Rules as to the weight of shoes are attended to—viz., (*a*) For Hackneys exceeding 14 hands (except Hackney yearling colts and Hackney yearling fillies), no shoe (nails included) may exceed 2 lb. in weight; (*b*) for Ponies not exceeding 14 hands, Hackney yearling colts and Hackney yearling fillies, no shoe (nails included) may exceed 1½ lb. in weight.

Overfeeding.

30. Breeding Stock must not be shown in an improper state of fatness, and the Judges are requested not to award Premiums to overfed animals; and no Cattle or Sheep which after the age of twelve months have been exhibited as Fat Stock at any Show are eligible to compete in the Breeding Classes for the Society's Prizes.

Sires.

31. Aged Bulls and Stallions must have had produce, and, along with two-year-old Bulls, three-year-old Colts, and two-shear and aged Tups, have served within the twelve months immediately preceding the Show.

Calving of Cows.

32. Except as may be otherwise specially provided in this Premium List, cows of all breeds (other than Ayrshire) must have had a calf within nine months previous to the Show, and when exhibited must be in milk.

Cows of the Ayrshire breed must have had a calf within fifteen months previous to the Show. Animals of any age that have had a calf must be shown as Cows.

In-calf Heifers. 33. Two-year-old Heifers of the Shorthorn, Aberdeen-Angus, Galloway, and British Friesian breeds, two-year-old Yeld Ayrshire Heifers, and three-year-old Highland Heifers, must be in calf when exhibited, and the Premiums will be withheld till birth be certified, which must be within nine months after the Show.

Mares. 34. A Mare entered in a class for "Mares with foal at foot" must have produced a foal after 1st January of the year of the Show, must have regularly nursed her own or another foal, and must have the foal with her in the Show. If the mare's own foal is alive it must be the foal shown with the mare. In the case of a Mare that has not foaled before the Show, or whose foal has died, she shall, if not in milk, be eligible without further entry to compete among the Yeld Mares if a corresponding class for Yeld Mares be included in the Premium List. Agricultural Yeld Mares must produce a foal within twelve months from the first day of the Show. A Mare in a class for "Mares or Geldings" may or may not have had a foal in the year of the Show, but shall not have her foal exhibited with her, nor be in milk at the time of the Show.

Sows. 35. All Sows farrowed prior to the year before the Show must have produced a litter of pigs in the year of the Show before the opening day. Sows farrowed in the year prior to the year of the Show must either have produced a litter of pigs before the Show, or produce a litter within three months of the last day of the Show. Certificates of the date of farrowing must be supplied in every case.

Calves and Foals. 36. With reference to Regulation 33, birth of a live or full-time calf must be certified; and in regard to Regulation 34, birth of at least a nine months' foal; or in the case of the death of the dam, a Veterinary Surgeon's certificate must be produced certifying that at the time of death the animal was so far advanced with calf or foal that if it had lived it would have produced a calf or foal within the periods stated in Rules 33 and 34. Certificates required by the foregoing Regulations will be issued after the Show, and must reach the office of the Secretary as follows: calving certificates within ten months, farrowing certificates within four months, and foaling certificates within thirteen months, of the last day of the Show. In default of this, the animal will be regarded as having failed to fulfil the Regulations, and the prize will therefore pass to the animal next in order of merit or be forfeited.

Calving, Farrowing, and Foaling Certificates.

Special Prizes. 37. Except when otherwise provided, the awards of Special Prizes shall not be subject to the Regulations as to calving and foaling.

Payment of Prizes. 38. The Premiums awarded, except those withheld till birth of calf or foal or litter of pigs is certified, will be paid as soon after the Show as practicable, and, with the exception of the Tweeddale Gold Medal, Special Cups, and Medals, may be taken either in money or in plate.

Veterinary Examination of Stallions and Colts. 39. No Stallion or Colt shall be allowed to compete for any of the Society's Prizes until it has been certified free from hereditary unsoundness by a Veterinary Surgeon appointed for that purpose by the Society, except in those cases where the name of the animal appears on the Register of Stallions for the current year of the Board of Agriculture and Fisheries or the Board of Agriculture for Scotland.

Soundness of other Horses. 40. Judges are particularly requested to satisfy themselves, as far as possible, regarding the soundness of all other Horses before awarding the Prizes, and to avoid giving Prizes to animals showing symptoms of hereditary disease. The Judges may consult the Society's Veterinary Surgeon if they deem it expedient. Private accommodation is provided for the examination of horses by the Veterinary Surgeon. No protests on veterinary grounds will be received.

Accommodation for examination.

Ewes. 41. Every Ewe must have given birth to and reared a lamb in the year

of the Show; and Ewes of the Blackface and Cheviot breeds must be in milk, and have their lambs at foot.

Milking.

42. Animals in milk of the Dairy breeds must be milked dry at 6 o'clock on the evening previous to the opening of the Show in the presence of, and to the satisfaction of, the Steward of Cattle or a representative of the Society duly authorised by him.

Clipping.

43. Sheep must have been clipt bare after the first day of the November preceding the Show, no part of the animal to be clipt prior to that date—this Rule not to apply to Cheviot Sheep.

Colouring Blackface Sheep.

44. The Steward of Sheep, who can call in assistance if so desired by him, shall have full power to disqualify any pen of Blackface, Cheviot, Border Leicester, and Half-bred Sheep which he considers unnaturally coloured, or when the fleece, face, or legs have been dealt with by the use of foreign substances.

Suffolk Flock Book.

45. All Suffolk Sheep shown must be entered or eligible for entry in the Suffolk Flock Book.

Poultry.

46. In Poultry the Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Railway Passes.

47. Railway Certificates for Stock and Implements are issued to Exhibitors before the Show along with their Tickets of Admission, one Certificate for the outward and another for the return journey being sufficient for each Exhibitor for any number of exhibits (cancelled for 1919).

Admission of Stock.

48. Poultry and Stock will be admitted on Monday, the day before the opening of the Show, and, with the exception of Horses, must be in the Yard before 12 o'clock that night. Horses must be in before 8 o'clock on the morning of Tuesday, except those entered in classes for which other times for arrival are elsewhere stated in this List. Judging begins at 9.30 A.M. on Tuesday. Exhibited on Tuesday, Wednesday, Thursday, and Friday. Stock may be admitted on the Saturday preceding the Show, but only by sending two days' prior notice to the Secretary's Office in the Showyard.

Parades.

49. Horses and Cattle must be paraded at the times stated in the Programme of the Show, and when required by the Stewards, and under their direction. Females of the Highland Cattle breed will, on this occasion, be paraded at the option of the exhibitor. In Parade, Horses must be ridden or led as provided in their respective classes. Prize and commended Cattle and Horses will receive two rosettes each, which must be attached to the head of the animal, one on each side. Attendants must be beside their animals *twenty minutes before the hour of Parade*, and be ready to proceed to the ring immediately on receiving the order of the Stewards. Infringement of this Rule, or failure of any attendant to obey the orders of the Society's officials, will render the Exhibitor liable to a fine of 20s. for each separate infringement or act of disobedience, and to the forfeiture of any or all of the Prizes awarded to him at this Show.

Responsibility of Exhibitors

50. Exhibitors shall be answerable for all acts, whether committed by themselves, their servants, or others in charge of their Stock, and shall be responsible for the condition of their animals during the whole time they remain in the Showyard.

Moving from stalls.

51. No animal shall be taken out of its stall after 10 A.M. during the Show except by order of the Stewards, or with permission of the Secretary.

Washing Cattle.

52. Cattle shall not be taken out of their stalls to be washed after the Judging has commenced. Cattle must not be washed beside the Judging Rings. Those infringing this Rule shall be liable to a fine of 10s.

Soaping prohibited.

53. Soap or other adhesive material must not be used in dressing cattle or horses. Infringement of this Rule will render the animal upon which the material is used liable to be disqualified.

Loose-boxes and Stalls.

54. Loose-boxes will be provided for all horses; covered accommodation for other live stock. Boxes (floored) for attendants on Cattle, Horses, Sheep, Goats, and Pigs will be provided at a charge of 40s. for each box for members; 50s. for non-members. (See Rule 79.)

Floored boxes and stalls for Animals. 55. Exhibitors requiring the boxes, stalls, or pens for their animals to be floored must give instructions, stating the Catalogue No., to the Showyard contractors, Messrs Macandrew & Co., Showyard, ten days before the Show opens. (For charges, see Rule 78.)

Securing Cattle. 56. Bulls must be secured by nose-rings, with chains or ropes attached, or with strong halters and double ropes. All Cattle, other than Highland Cattle, must be tied in their stalls.

Concealing Animals. 57. During the time the Show is open to the public no rug shall be hung up so as to conceal any animal in a horse-box or stall, except with the special permission of the Steward of that department.

Fodder. 58. Five days' supply of straw, hay, grass, and tares will be provided free by the Society. Any additional fodder or other kinds of food required will be supplied at fixed prices in the Forage-yard. The Forage-yard will close at 1.30 P.M. on Friday, the last supply to be given to attendants then; and if any extra supply is required on account of stock remaining in the Yard after the close of the Show, notice must be given to the Forage Steward not later than 5 o'clock on Thursday. Any servant removing bedding from an adjoining stall will be fined in double the amount taken. Exhibitors may fetch their own cake or corn to the Yard, but not *grass, tares, hay, or straw.* Coops, food, and attendance for Poultry will be provided by the Society.

Feeding appliances. 59. Servants in charge of Stock must bring their own buckets or pails, and a piece of rope or sheep-net to carry their forage. Mangers, and sheep and pig troughs, will be provided.

Sawdust. 60. Sawdust must not be used as bedding for Stock.

Water. 61. As the command of water in the Yard is limited, it is particularly requested that waste be avoided.

Lights and Smoking. 62. No lights allowed in the Yard at night, and Smoking is strictly prohibited within the Sheds. Those infringing this Rule shall be liable to a fine of 10s. *Closing of Gates.* The gates will be closed at midnight, and no person shall be allowed to enter or leave the Yard between that time and 5 A.M. without a special permit.

Removal of Stock. 63. Stock or Poultry cannot be removed from the Yard till 5 P.M. on Friday, the last day of the Show, except on certificate by the Veterinary Surgeon employed by the Directors, countersigned by the Steward of the department or the Secretary.

Withdrawal of horses over night. 64. At the close of the Show on Tuesday, Wednesday, and Thursday, horses may be withdrawn for the night on a deposit of £5 for each animal, which shall be forfeited, along with any prize money it may have gained, if the animal is not brought back. They must return between 7 and 7.30 the following morning, and those not in before 8 shall forfeit 10s. Horse passes to be applied for at the Secretary's Office between 5 and 6 P.M. on Tuesday, and the deposit, unless forfeited in whole or in part, will be returned between 12.30 and 2.30 on Friday.

Order in removal. 65. When the Stock is leaving the Yard, no animal is to be moved till ordered by those in charge of clearing the Yard. Those transgressing this Rule shall be liable to a fine of 10s., and to be detained till all the other Stock is removed.

Penning and removing Poultry. 66. Poultry may be penned before the opening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor an authorised representative of the Exhibitor being present to pen or remove Poultry, the birds will be penned and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to Exhibits by errors or accidents in penning, despatching, or conveying Exhibits.

Closing of Poultry Shed to Public. 67. On the opening day of the Show the Poultry Shed will be closed to the public during the Judging. On the last day of the Show the Poultry

Shed will be closed to the public at 4 P.M.; at 5 P.M. Exhibitors or their representatives will be admitted to the Shed to remove Exhibits, provided the Exhibitor has, *not later than* 11 A.M. *on the last day of the Show*, given written notice to the Secretary to the effect that the Exhibitor or the Exhibitor's representative will attend at the Poultry Shed at 5 P.M. to remove the birds.

JUDGING STOCK AND POULTRY.

Opening Gates.

68. On Tuesday, the first day of the Show, no person will be admitted, except Servants in charge of Stock, till 8 A.M., when the Gates are opened to the public.

Judging.

69. The Judges will commence their inspection at 9.30 A.M. The spaces reserved for the Judging will be enclosed, and no encroachment shall be permitted.

Insufficient merit.

70. In no case shall a Premium be awarded unless the Judges deem the animals to have sufficient merit; and where only one or two lots are presented in a class, and the Judges consider them unworthy of the Premiums offered, it shall be in their power to award a lower prize.

Commendations.

71. In addition to the Premiums, the Judges may award one Very Highly Commended, one Highly Commended, and as many Commended tickets in each class as they consider justified by the number and merit of the entries.

Ayrshire Cows and Heifers.

72. Ayrshire Cows which have not calved before the Show, whether entered in a class for Cows in Milk or for Cows in Calf, shall be judged along with the Cows in Calf, and Ayrshire Cows or Heifers which have calved before the Show—in whichever of the classes entered—shall be judged along with Cows in Milk.

Attending Members' duties.

73. Attending Members will accompany each section of the Judges. It will be the duty of Attending Members to bring the animals out to the Judges and to see that no obstruction is offered to them, and that the space reserved for them is not encroached upon; to ticket the prize animals; to send the Nos. of the prize animals to the Award Lectern near the Secretary's Office; to assist the Judges in completing their return of awards; and should any difficulty arise, to communicate with the Stewards or Secretary.

74. It shall not be competent for any Exhibitor, nor for his Factor or Land-Steward, to act as a Judge or attending Member in any class in which he is competing.

DAIRY PRODUCE.

75. Dairy Produce will be received in the Showyard on Monday, the day before the opening of the Show, and till 8 A.M. on Tuesday, the first day of the Show. Judged at 9.30 A.M. on Tuesday. Exhibited Tuesday, Wednesday, Thursday, and Friday.

Placing and removing Dairy Produce.

76. Dairy Produce must have been made on the Exhibitor's farm in the year of the Show. No Exhibitor shall show more than one lot in each class. Exhibits of Dairy Produce may be placed before the opening and removed at the close of the Show by Exhibitors themselves or their representatives. In the event of neither the Exhibitor nor a person with written authority from the Exhibitor being present to place or remove exhibits, they will be placed and removed by men hired and paid by the Society, but this will be done on the understanding that the men are hired to do the work on behalf of Exhibitors, and solely at their risk, and that the Society will be in no way responsible for expenses incurred or loss of or injury to exhibits by errors or accidents in placing, despatching, or conveying exhibits. In the case of exhibits which are not removed by 5.30 P.M. on the closing day of the Show, the Society will hold itself at liberty to hand them over to the railway companies for despatch to the respective Exhibitors.

STALL RENT (INCLUDING ENTRY FEE).

Stall Rent. 77. The Stall Rents (which include Entry Fees) as stated opposite the individual Classes in this List, shall be paid by Exhibitors when making their Entries. The Secretary is instructed to return entries sent without the necessary fees.

FLOORED BOXES AND STALLS.

Floored Stalls for Animals. 78. Exhibitors desiring the boxes, stalls, or pens for their animals to be floored can have this done by giving instructions, stating the Catalogue No., ten days before the opening of the Show, to the contractors, Messrs Macandrew & Co., the Showyard, to whom the following charges for flooring have to be paid: Horses, 30s. each; Ponies, Cattle, Sheep, and Pigs, 20s. each.

ACCOMMODATION FOR ATTENDANTS.

Accommodation for Attendants. 79. Boxes for accommodation of attendants on Stock will, if desired, be provided beside the Stock at a charge of 40s. per box for members and 50s. for non-members. Attendants' boxes will be floored and lined with wood, with door. Applications for attendants' boxes must accompany entries of Stock, and Exhibitors must state the animal next to which the attendants' box is to be placed. Attendants' boxes cannot be guaranteed after the closing date.

IMPLEMENTS AND OTHER ARTICLES.

Admission of Goods. 80. Implements will be received in the Yard from Tuesday, 1st July, till 5 o'clock on the afternoon of Monday, 7th July. Exhibited Tuesday, Wednesday, Thursday, and Friday. The Schedule of Entry must be filled up so far as within the knowledge of the Exhibitor, and prices must be stated.

Premiums. 81. No Money Prizes or Medals, except when specially offered, will be given by the Society for Implements of any kind.

Refusing Entries. 82. Agricultural Implements, and Implements and collections of articles not Agricultural, will be received for Exhibition, but the Secretary is entitled to refuse Entries from dealers in articles not deemed worthy of Exhibition.

Local Operatives. 83. In order to encourage exhibits of Agricultural Implements from operative Blacksmiths and Carpenters in the district of the Show, open space will be provided for these in some less prominent part of the Yard at a charge of 20s. for space 10 feet wide and 20 feet deep.

Articles not entered. 84. Every article to be exhibited must be entered on the Society's Entry Form. Any article not so entered that is taken to the Show is liable to be ordered out of, or removed from, the Showyard, or confiscated to the Society. Exhibitors infringing this rule are moreover liable to a fine of £1.

Selling by auction and noisy behaviour forbidden. 85. "Cheap-Jacks" are not admitted to the Showyard. The selling of goods by auction, shouting, and other behaviour calculated to annoy visitors or Exhibitors, are strictly forbidden. Exhibitors infringing this Regulation are liable to a fine of £1, and to have themselves and their goods ordered out of, or removed from, the Showyard, or to have their goods confiscated to the Society.

Placing Exhibits. 86. The articles of each Exhibitor must all be placed in one stand, except Implements in motion, and must not on any account extend beyond the allotted space. No article shall be moved out of its stand, or the stand dismantled, till the termination of the Show, at 5 P.M. on Friday. Those infringing this Rule shall be liable to a fine of 10s.

Removing Exhibits.

Restoring Turf. 87. When the ground requires to be broken, the turf must be carefully lifted and laid aside, and the surface must be restored to the satisfaction of the Society, and at the expense of the Exhibitor. Failing this being

done, the Society shall be at liberty to restore the ground and charge the cost to the Exhibitor.

88. Exhibitors must arrange their own articles *within* the space allotted to them before 9 o'clock on Tuesday, and to the satisfaction of the Stewards in charge of the Implement Yard. Exhibitors are prohibited from subletting space allotted to them, and from displaying the name of any other firm on their Stand. All signs, except signs on gables, must face the front only. Nails must not be driven into the canvas. *Arranging Exhibits.* *Signs.*

89. Exhibitors are not allowed to distribute handbills anywhere in the Yard except at their own Stand ; and they must not for this or any other purpose encroach upon the adjacent alleys or open spaces. *Handbills.*

90. Exhibitors are required to have their Stands and the portions of the alleys immediately adjoining them swept up before eight o'clock on each morning of the Show. *Sweeping Stands, &c.*

91. All Machines requiring steam or fire must be entered as such in the Certificate, and will be placed in the Motion Yard. *Coke only shall be used in all cases where fire is required.* Coal shall not be used at any time in the Showyard. Those infringing this Rule shall incur a penalty of £5. *Fuel.*

92. No Steam Engine shall be driven in the Yard at a greater speed than 4 miles an hour. Traction Engines shall not be used in conveying Exhibits or other goods into, from one place to another in, or out of the Showyard. Without *written* permission by the Steward of Implements or Secretary, Motor Waggons shall not be used in conveying goods into or out of the Showyard. *Steam Engines.* *Motors.*

93. Locomotive and Traction Engines and other Machines must not be moved from their places without permission of the Secretary or Stewards, and must not leave their stands till 6 P.M. on Friday. *Traction Engines.*

94. There must be attached to each Implement, when forwarded to the Show, a label bearing the Exhibitor's name, and that of the Implement, as well as the number of the Exhibitor's stand. *Consigning Implements.*

95. The carriage of all Implements must be prepaid.

96. Photographing in the Showyard is not permitted, except by photographers having a Stand in the Showyard or holding a "Photographer's Ticket." The "Photographer's Ticket" may be had from the Secretary, price 15s. It admits the holder to the Show when open to the public and entitles him to photograph in the Showyard, subject to arrangements made by the Stewards. No photographer shall be allowed in the ring during Parades, except with the sanction of the Steward of Parades. *Photographing in Showyard.*

97. Covered Booths for Offices (9 feet by 9 feet), purely for business, not for exhibition of goods, can be had for £7 to Members and £10 to Non-Members. *Offices.*

98. Each Exhibitor in the Implement Department who is not a Member of the Society will receive one free Ticket of Admission to the Showyard for himself or a member of his firm, and will receive, in addition, for the use of attendants employed by him at his Stand, two Tickets of Admission for each complete ten feet of shedding in the Motion Yard, and one Ticket for each complete ten feet of shedding in the other sections. No additional Free Tickets can be issued in any circumstances whatever. Additional Attendants' Tickets, not more than five for one Exhibitor, may be obtained by application in writing by the Exhibitor at 5s. each. No tickets will be issued without an Order. *Exhibitors and Attendants' Tickets.*

99. The Tickets of Admission for Exhibitors and Attendants referred to in the foregoing Regulation will (about fourteen days prior to the Show) be issued to the Exhibitors in blank, with the number of the Exhibitor's Stand. The name of the person for whom each ticket is intended must be written on it before it is used. Each person holding a Free Ticket of Admission must sign his or her name on the back thereof, and must also, when required, sign his or her name in the book at the Entrance Gate. Exhibitors' attendants are strictly cautioned not to lend or transfer their *Tickets to be filled up and signed.*

Tickets not Transferable. Improper use of Tickets.

Tickets, which can be used only by the persons whose names they bear, and who must be *bona fide* acting for, or employed by, the Exhibitor. No Ticket is transferable. An Exhibitor is liable to a fine of £1 for each case of transfer or other improper use of a Ticket issued to himself or employee.

Admission of Supplies for Stand-holders.

100. The following are the arrangements for the admission of Supplies (Refreshments or other goods) for Stand-holders during the Show: Messenger on foot (with or without hand-barrow) with supplies, admitted by Special Ticket; price for one admission, 1s., for the four days, 3s. Horse vehicle and driver with supplies, admitted by Special Ticket; price for one admission, 1s., for the four days, 5s. These Special Tickets may be had from the Secretary. Horse vehicles, with supplies, admitted throughout the day on the first day of the Show; on the other three days they will not be admitted between the hours of 10 A.M. and 5 P.M. except by written permit from the Secretary.

Cycles.

101. The riding of Cycles in the Showyard is prohibited.

Accidents.

102. The Society will not be responsible for any accident that may occur from the machinery belonging to any Exhibitor; and it is a condition of entry that each Exhibitor shall hold the Society harmless, and indemnify it against any legal proceedings arising from any accident caused by his machinery.

Alcoholic Drinks.

103. The giving of Alcoholic Drinks to visitors at Stands in the Show is strictly prohibited.

Gas.

104. Exhibitors desiring the use of gas in the Showyard should apply to the Manager of the Edinburgh & Leith Corporations Gas Commissioners, Edinburgh, not later than Saturday, 31st May.

Space for Stands.

105. Ground to be taken in spaces of 10 feet frontage by 20 feet deep, except in Motion Yard, which is to be 10 feet or larger amount of frontage by 50 feet deep. Exhibitors must take their space in one or other of the following Sections. Space is not let partly covered and partly open. Exhibits not in motion may be excluded from the Motion Yard. The space in the Motion Yard being limited in extent, and intended mainly for exhibits in motion, not more than one-fifth of the space allotted to any one Exhibitor—and in no case more than 400 square feet—may be occupied in the Motion Yard by exhibits not in motion.

Exhibits not in Motion.

Maximum Space.

106. The maximum extent of space which any one Exhibitor may apply for shall be 40 feet of frontage in the Motion Yard, and 100 feet of frontage in the other Sections.

Allocation of space.

107. The Society reserves the right to allot to applicants for Stands either the whole or part of the space they ask for.

108. Rates for space, payable by Exhibitors when making their Entries:—

	Members.	Non-Members.
1. Space without Shedding, 20 ft. deep, per 10 ft.	£2 10 0	£3 10 0
2. Special Space, without Shedding, 20 ft. deep, per 10 ft.	4 0 0	5 0 0
3. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft.	2 10 0	3 10 0
4. Special Shedding, 20 ft. deep, 7 ft. to eave, per 10 ft.	4 0 0	5 0 0
5. Ordinary Shedding, 20 ft. deep, 7 ft. to eave, *close boarded at back*, per 10 ft.	3 4 0	4 4 0
6. Special Shedding, 20 ft. deep, 7 ft. to eave, *close boarded at back*, per 10 ft.	4 14 0	5 14 0
7. *Motion Yard, without Shedding, 50 ft. deep, per foot	0 10 0	0 16 0
8. *Motion Yard, with Shedding (10 ft. open behind, 20 ft. covered, and 20 ft. *open in front*), 11 ft. to eave, per foot	0 14 0	1 0 0
9. Covered Booths for offices, 9 ft. by 9 ft., each	7 0 0	10 0 0
10. Press offices, 9 ft. by 9 ft., each	£5.	

* See Rules 105 and 106.

ADMISSION OF THE PUBLIC.

The public will be admitted daily at 8 A.M. Judging begins on Tuesday at 9.30 A.M. The charges for admission to the Yard will be—Tuesday, from 8 A.M. till 5 P.M., 7s. 6d. Wednesday, from 8 A.M. till 5 P.M., 5s. Thursday, from 8 A.M. till 5 P.M., 3s.; from 5 P.M. till 8 P.M., 1s. 6d. Friday, from 8 A.M. till 5 P.M., 2s.

On Thursday and Friday children under twelve years of age admitted at 1s.

No Pass-out Checks given, and no re-admission without payment.

ADMISSION OF MEMBERS AND EXHIBITORS.

On exhibiting their "*Member's Badge*," which is strictly not transferable, Members of the Society are admitted free to the Showyard and (provided there is room) to the Enclosures and Stands around the Large Ring, excepting the Reserved Seats in the Grand Stand, and such other parts as may be specially reserved. Badges will be sent to all Members residing in the United Kingdom whose addresses are known, and on no account will duplicates be issued. **All Members not producing their badges must pay at the gates, and the admission money will not on any account be returned.** Badges must be signed by Members before being presented at the gate, and Members should continue to wear the badge during the whole time that they are in the Showyard.

Tickets of admission to the Showyard are sent to Exhibitors of Stock, Poultry, and Dairy Produce (not Members) whose Entry Fees amount to not less than 10s.

For Exhibitors of Implements and their assistants tickets are issued as provided in the Regulations for Implements.

RESERVED SEATS (NUMBERED) IN GRAND STAND.

For Charges and Tickets, apply to Secretary.

Booking-Office in Showyard behind Grand Stand.

VARIOUS.

Exhibitors may display their own Placards *inside and in front of* their stands ; with this exception, no Bills of any kind other than those of the Society are permitted on any of the Show erections. No newspapers or any other articles to be carried about the Yard for sale or display.

No Carriages or Equestrians admitted without special leave from the Directors, and then only for Invalids. Bath-chairs may be brought in.

Premium Lists, Regulations, and Certificates of Entry may be obtained by applying at the Secretary's Office, No. 3 George IV. Bridge, Edinburgh.

All Communications should be addressed to The Secretary of the Highland and Agricultural Society of Scotland, No. 3 George IV. Bridge, Edinburgh. From 3rd to 10th July, to the Secretary's Office, Showyard, Edinburgh.

Address for Telegrams—"SOCIETY," EDINBURGH.

Telephone No.—CENTRAL 3655.

RAILWAY ARRANGEMENTS.

The Railway Companies will be furnished with a list of the Exhibitors of Stock and Implements, after the 18th June. All applications for horse-boxes and trucks, and for information as to train arrangements, must be made by the Exhibitors themselves to the Stationmaster where their stock is to be trucked.

The arrangements made by the Railway Companies for the conveyance of Live Stock and Goods to and from the Show are **indicated** *below, but exhibitors are recommended to apply to the respective companies for* **full particulars** :—

1. Live Stock and Goods *to* the Show to be charged ordinary rates.
2. Live Stock and Goods *from* the Show to be charged ordinary rates.
3. Poultry to be charged ordinary rates both ways, and will not be accepted for conveyance unless the carriage charges are prepaid.
4. Horse-boxes, or other Passenger Train vehicle, will not be provided for the carriage of Live Stock sent by Goods Train and invoiced at Goods Train rates. *For rates for Horse-boxes by Passenger and Special Trains, apply to the Railway Companies.*
5. Provender conveyed to Agricultural Shows with Live Stock by Passenger Train Service will be charged ordinary rates, except so much of the same as may be required on the journey (not applicable by Goods Train).
6. The ordinary rates charged for carriage do not in any case include delivery *to*, or collection *from*, the Show-ground.
7. Tents, Canvas, and other articles, not for exhibition, to be charged the ordinary rates both going and returning.
8. The carriage of all Live Stock, Implements, and other articles going to the Show for exhibition must be *prepaid;* and the carriage on all traffic returned from the Show by Passenger Train Service must be *prepaid.*
9. Carriages and other road vehicles are not conveyed by Passenger Train.
10. Owing to the difficulties on the Railways due to the War, no Single package if sent unaccompanied, conveyed by Passenger Train, must exceed 112 lbs. in weight. Articles accompanied by Passengers must not exceed 100 lbs. weight, and no weight in excess of 100 lbs. will be allowed.

DELIVERY AND COLLECTION CHARGES.

The following will be the Charges for the Delivery or Collection of Live Stock, Implements, and other articles between the Railway Stations at Edinburgh and the Show-ground :—

General traffic, 7s. 6d. per ton (minimum charge per consignment, 2s. 6d.)
Implements and Machinery (Agricultural), not exceeding 1 ton each, 8s. 6d. per ton (minimum charge per consignment, 4s.)
Implements and Machinery (Agricultural), on their own wheels (specially hauled), not exceeding 1 ton, 8s. 6d. each.
Single articles, exceeding 1 ton but not exceeding 3 tons, 10s. per ton.
Single articles, exceeding 3 tons but not exceeding 5 tons, 14s. per ton.
Single articles, exceeding 5 tons, by special arrangement only, but no less charge than 18s. per ton.
Rustic Houses, by special arrangement only, but no less charge than 16s. per load.
Carriages, four-wheeled, 10s. each.
Carriages, two-wheeled, 8s. each.
Cattle, in floats, 7s. 6d. per head ; minimum charge, 10s.
Sheep, Goats, and Pigs, in floats, 2s. per head (minimum charge, 10s. for each consignment).
Pigs in crates, 4s. per crate (minimum, 7s. 6d. per load).

Poultry in crates or hampers, 9d. per crate or hamper.
Parcels or Hampers by Passenger Train, 6d. each.
Miscellaneous Passenger Train Traffic, including packages of plants and flowers, carried at O.R. rates S. to S., 9d. per cwt. (minimum, 1s. 6d. per consignment).

REGULATIONS FOR DAIRY SHORTHORN CLASS.

The Shorthorn Dairy Cows in Class 7 will be milked dry at 6 o'clock on the evening previous to the opening of the Show, in the presence of, and to the satisfaction of, the Steward of Cattle or a representative of the Society duly authorised by him, and will be milked in the ring on the first morning of the Show in the presence of the Judge, who shall see the milk weighed, and any cow that does not yield up to the following standard shall not be awarded a prize :—

Cows having calved within three calendar months of the first day of the Show, 25 lb. of milk.
If calved more than three calendar months from the first day of the Show, 20 lb. of milk.

REGULATIONS FOR GOAT CLASSES.

The animals will be milked dry at 6 o'clockon the evening previous to the opening of the Show, in the presence of, and to the satisfaction of, the Steward or a representative of the Society duly authorised by him.

All Goatlings and Kids must have been entered in the Kid Register of the British Goat Society as a guarantee of age, and the registered number must be given on the entry form.

Milking Competition—Classes 131 and 135.

The animals will be milked at 5 p.m. on Tuesday, 9th July, at an appointed place in the order arranged by the Steward, and the milk of the next twenty-four hours will be taken for the trials.

The prizes will be awarded according to the following scale of points :—

For each pound of milk . . . . . 1 point.
For each 6 days the Goat has been in milk (deducting the first forty days after kidding), with a maximum of 6 points . . . . . $\frac{1}{10}$ of a point.
For each $\frac{1}{4}$ lb. of fat in the milk . . . . . 5 points.
For each $\frac{1}{4}$ lb. of solids, other than fat, in the milk . 1 point.
In cases where the milk contains less than 4 per cent of fat 1 point will be deducted.

The period of lactation to be calculated from the date of kidding to the first day of the Show.

Fractions of lbs. of milk, percentage of fat, of solids other than fat and incomplete periods of less than 6 days, to be worked out in decimals and added to the total points.

A Certificate giving the last date of kidding, signed by the owner of the Goat exhibited, or his Agent, must in every case be brought to the Steward of Goats as soon as possible after the animal has arrived in the Showyard.

The milk yielded by Goats in the Showyard shall be the property of the Society.

THE PRESIDENT'S CHAMPION MEDALS

A Champion Medal is given by the Right Hon. THE EARL OF ROSEBERY, K.G., K.T., President of the Society, for the *best Animal* in each of the following sections :—

1. Shorthorn.
2. Aberdeen-Angus.
3. Galloway.
4. Highland.
5. Ayrshire.
6. Jersey.
7. Shetland.
8. British-Friesian.
9. Clydesdale Stallion.
10. Draught Gelding.
11. Clydesdale Mare and Filly.
12. Hunter.
13. Hackney.
14. Pony.
15. Highland Pony.
16. Shetland Pony.
17. Harness Horse.
18. Blackface Sheep.
19. Cheviot.
20. Border Leicester.
21. Half-bred.
22. Oxford-Down.
23. Suffolk.
24. Shropshire.
25. Goat.
26. Pig.

NOTE.—*Animals entered as Extra Stock may compete for these Medals. Former Winners of the President's Medals are eligible. The Society shall have the right to photograph the Winners for publication in the 'Transactions.' At this Show no animal can be awarded more than one of these Medals.*

ENTRY FEES		CLASS		PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
				£	£	£	£
			[1] **Fife and Kinross Perpetual Gold Challenge Cup,** value £200, for best Shorthorn Animal, "Extra Stock" being eligible to compete.				
			[2] **Tweeddale Gold Medal** for best Shorthorn Bull.				
30/-	50/-	1	**Bull** calved before 1917	15	10	5	3
30/-	50/-	2	**Bull** calved in 1917	15	10	5	3
30/-	50/-	3	**Bull** calved in 1918	12	8	4	2
			[3] **Best Shorthorn Bull in the Show,** entered or eligible for entry in Coates's Herd-Book—£20.				
			[3] **Silver Medal** to the Breeder of the winner of above Prize.				
			Breeder of best Bull of any age in the three Classes—The Silver Medal.				
30/-	50/-	4	**Cow** calved before 1917, in Milk . . .	12	8	4	2
30/-	50/-	5	**Heifer** or **Cow** calved in 1917 . . .	10	5	3	2
30/-	50/-	6	**Heifer** calved in 1918	10	5	3	2
			[3] **Best Shorthorn Female in the Show,** entered or eligible for entry in Coates's Herd-Book—£20.				
			[3] **Silver Medal** to the Breeder of the winner of above Prize.				
			DAIRY SHORTHORN				
30/-	50/-	7	† **Dairy Shorthorn Cow,** in Milk, four years old and upwards, entered in Coates's Herd-Book—[4] Premiums, £12, £8, £4, £2.				
			PRIZE MONEY BY SOCIETY . £158				
			CONTRIBUTED PRIZES . . 66				

* See Rules 32 and 33.

[1] This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar-Fife in 1912. This year the Cup is offered for the best animal of the Shorthorn breed. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

[2] Annual Free Income from fund of £500.

[3] Given by the Shorthorn Society.

[4] Given by Mr J. Milne Henderson, Manager, North of Scotland and Town & County Bank Ltd. Edinburgh.

† For Conditions see page 75.

CATTLE

ABERDEEN-ANGUS

President's Medal for best Aberdeen-Angus Animal

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First	Second	Third	Fourth
				£	£	£	£
30/-	50/-	8	**Bull** calved before 1st Dec. 1916	15	10	5	3
30/-	50/-	9	**Bull** calved on or after 1st Dec. 1916	15	10	5	3
30/-	50/-	10	**Bull** calved on or after 1st Dec. 1917	12	8	4	2
			[1] **Ballindalloch Challenge Cup**, value £50, for the best Bull in the three Classes.				
			Breeder of best Bull of any age in the three Classes—The Silver Medal.				
			Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
30/-	50/-	11	**Cow** of any age in Milk	12	8	4	2
			[1] **Ballindalloch Challenge Cup**, value £50, for the best Cow of any age in the above Class.				
			Breeder of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.				
30/-	50/-	12	**Heifer** calved on or after 1st Dec. 1916	10	5	3	2
30/-	50/-	13	**Heifer** calved on or after 1st Dec. 1917	10	5	3	2
			[2] **Champion Gold Medal**, for best animal in the breeding Classes, breeding animals shown as "Extra Stock" being eligible to compete.				
			PRIZE MONEY BY SOCIETY . £158				

GALLOWAY

President's Medal for best Galloway

30/-	50/-	14	**Bull** calved before 1st Dec. 1916	15	10	5	3
30/-	50/-	15	**Bull** calved on or after 1st Dec. 1916	15	10	5	3
30/-	50/-	16	**Bull** calved on or after 1st Dec. 1917	12	8	4	2
			Breeder of best Bull of any age in the three Classes—The Silver Medal.				
30/-	50/-	17	**Cow** of any age in Milk	12	8	4	2
30/-	50/-	18	**Heifer** calved on or after 1st Dec. 1916	10	5	3	2
30/-	50/-	19	**Heifer** calved on or after 1st Dec. 1917	10	5	3	2
			[3] **Dr Gillespie Memorial Challenge Trophy**, value £50, for best Galloway Animal in the breeding Classes, breeding Animals shown as "Extra Stock" being eligible to compete—see conditions below.				
			PRIZE MONEY BY SOCIETY . £158				

[1] "The Ballindalloch Challenge Cups," value £50 each, are offered for the best Bull of any age and best Cow of any age (Heifers excluded) in the Aberdeen-Angus classes, the former presented by the late Sir George Macpherson Grant, Bart., and the latter by the late Sir John Macpherson Grant, Bart. Each Cup will become the property of the Exhibitor who shall win it five times, not necessarily in succession. The breeder of the successful animals each year will receive the Society's Silver Medal, with suitable inscription.

[2] Given by the Aberdeen-Angus Cattle Society.

[3] This Trophy is offered by the Galloway Cattle Society of Great Britain and Ireland (subject to the conditions of that Society) for the best Galloway animal registered in the Galloway Herd Book, entered in any of the Breeding classes, at the Show or Shows at which it may be competed for. The winner of the Trophy shall, before delivery thereof is made to him, give security to the Galloway Cattle Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner on each occasion will receive the Galloway Cattle Society's Silver Medal as a memento of his winning the Trophy.

ENTRY FEES		CLASS	CATTLE	PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
			HIGHLAND	£	£	£	£
			President's Medal for best Highland Animal				
30/-	50/-	20	**Bull** calved before 1917	15	10	5	3
30/-	50/-	21	**Bull** calved in 1917	15	10	5	3
30/-	50/-	22	**Bull** calved in 1918	12	8	4	2
			[1] **Perpetual Victory Challenge Cup,** approximate value 50 Guineas, for the best animal in the male Classes, "Extra Stock" being eligible to compete. **Breeder of best Bull** of any age in the three Classes—The Silver Medal.				
30/-	50/-	23	**Cow** of any age in Milk	12	8	4	2
30/-	50/-	24	**Heifer** calved in 1916	10	5	3	2
30/-	50/-	25	**Heifer** calved in 1917	10	5	3	2
			[1] **Perpetual Victory Challenge Cup,** approximate value 35 Guineas, for the best animal in the female Classes, "Extra Stock" being eligible to compete.				
			PRIZE MONEY BY SOCIETY . . £158				
			AYRSHIRE				
			President's Medal for best Ayrshire				
50/-	70/-	26	[2] **Cow** in Milk,* calved before 1916 . . .	12	8	4	—
50/-	70/-	27	[2] **Cow** in Milk,* calved after 1st Jan. 1916 . .	10	7	3	—
50/-	70/-	28	[2] **Cow** of any age in Calf,* or Heifer, calved in 1916, in Calf and due to calve within nine months after the Show	10	7	3	—
30/-	50/-	29	**Heifer** calved in 1917	10	5	3	—
30/-	50/-	30	**Heifer** calved in 1918	8	5	3	—
			[3] **Special Prize of £10** for the best Female Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st June 1919.				
30/-	50/-	31	**Bull** calved before 1917	12	8	4	—
30/-	50/-	32	**Bull** calved in 1917	10	7	3	—
30/-	50/-	33	**Bull** calved in 1918	8	5	3	—
			Breeder of best Bull of any age in Classes 31, 32, and 33—The Silver Medal.				
			MILK RECORD CLASS				
30/-	50/-	34	[4] **Bull,** any age, the progeny of an Ayrshire Cow having an authenticated milk yield—[5] Premiums, £15, £10, and £5.				

* See Rule 72.

[1] Given by the Highland Cattle Society of Scotland.

[2] Cows in these Classes must have produced a calf within fifteen months prior to the Show.

[3] Given by the Ayrshire Cattle Herd-Book Society.

[4] Animals entered in this Class must be the progeny of dams certified by the Secretary of the Scottish Milk Records Association to have produced, as cows, at least once, not less than 900 gallons, or as heifers, not less than 750 gallons of milk, averaging not less than 3·5 per cent of butter fat, within a lactation period not exceeding 52 weeks preceding calving, or alternatively, 40 weeks after calving. Forms of certificate will be issued on application to the Secretary of the Highland and Agricultural Society. Animals already entered in Classes 31, 32, and 33 may be entered in Class 34 without additional fee.

[5] Given by the Board of Agriculture for Scotland.

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First	PREMIUMS Second	PREMIUMS Third
			CATTLE			
			AYRSHIRE—*continued*			
				£	£	£
			[1] Special **Prize of £10** for the best Male Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book not later than 1st June 1919.			
			PRIZE MONEY BY SOCIETY . . £158			
			CONTRIBUTED PRIZES . . . 50			
			JERSEY			
			President's Medal for best Jersey Animal.			
50/-	70/-	35	**Cow** in milk, any age	5	3	2
50/-	70/-	36	**Heifer** calved in 1918	5	3	2
			PRIZE MONEY BY SOCIETY . . £20			
			SHETLAND			
			President's Medal for best Shetland Animal			
30/-	50/-	37	**Cow**, any age	5	3	2
30/-	50/-	38	**Heifer** calved in 1918	5	3	2
			PRIZE MONEY BY SOCIETY . . £20			
			BRITISH FRIESIAN			
			President's Medal for best British Friesian Animal			
30/-	50/-	39	**Cow** in milk, calved in or before 1916 . .	8	4	2
30/-	50/-	40	**Heifer** calved in 1917 or 1918 . . .	6	3	2
30/-	50/-	41	**Bull** calved in or before 1916 . . .	8	4	2
30/-	50/-	42	**Bull** calved in 1917 or 1918 . . .	6	3	2
			Two Champion Silver Medals are offered by the British Friesian Cattle Society for the best female and for the best male exhibited.			
			PRIZE MONEY BY SOCIETY . . £25			
			[2] CONTRIBUTED PRIZES . . . 25			
			PRIZE MONEY BY SOCIETY . . £855 0			
			CONTRIBUTED . . . 141 0			
			CUPS, MEDALS, &c. . . 474 5			
			Total Prizes for Cattle . £1470 5			

[1] Given by the Ayrshire Cattle Herd-Book Society.
[2] £25 contributed by the British Friesian Cattle Society.

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS	[1] HORSES FOR AGRICULTURAL PURPOSES	PREMIUMS First £	Second £	Third £	Fourth £
			DRAUGHT STALLIONS				
			President's Medal for best Clydesdale Stallion or Colt				
			[2] **Renfrewshire Perpetual Gold Challenge Cup,** value £250, for best Clydesdale Stallion or Colt in Classes 43, 44, 45, and 46, "Extra Stock" being eligible to compete.				
60/-	80/-	43	**Stallion** foaled before 1916	20	15	10	4
60/-	80/-	44	**Entire Colt** foaled in 1916	20	15	10	4
60/-	80/-	45	**Entire Colt** foaled in 1917	20	15	10	4
45/-	65/-	46	**Entire Colt** foaled in 1918	15	10	6	4
			Breeder of best Male Animal of any age in Classes 43, 44, 45, and 46—The Silver Medal.				
			[3] **William Taylor Memorial Prize of not less than £10 and Certificate** to the breeder of the best Clydesdale Colt entered in Classes 45 or 46.				
			PRIZE MONEY BY SOCIETY . £182				
			CONTRIBUTED PRIZES . . 10				
			DRAUGHT GELDINGS				
			President's Medal for best Draught Gelding				
45/-	65/-	47	**Draught Gelding** foaled before 1916	10	5	3	–
45/-	65/-	48	**Draught Gelding** foaled in 1916	6	4	3	–
45/-	65/-	49	**Draught Gelding** foaled in 1917	6	4	3	–
			PRIZE MONEY BY SOCIETY . £44				
			DRAUGHT MARES AND FILLIES				
			President's Medal for best Clydesdale Mare or Filly				
60/-	80/-	50	**Mare** of any age, with Foal at foot	20	12	7	4
45/-	65/-	51	**Yeld Mare** foaled before 1916	12	9	6	4
45/-	65/-	52	**Yeld Mare or Filly** foaled in 1916	12	9	6	4

[1] **For prizes given by the Society, no animal is allowed to compete in more than one Class, except that horses entered in other Classes may also compete in the Jumping and Driving Classes.**

[2] This Cup, along with an endowment of £500, was provided from money collected in Renfrewshire by the late Provost Muir MacKean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrewshire in 1913. This year the Cup is offered for the best Clydesdale Stallion or Entire Colt. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a replica in silver as a memento of his winning the Cup.

[3] Given by William Taylor Memorial Committee.—Annual free income from Fund of £300.

ENTRY FEES		CLASS		PREMIUMS			
Members	Non Members			First	Second	Third	Fourth
			HORSES				
			DRAUGHT MARES AND FILLIES—*continued*	£	£	£	£
45/-	65/-	53	**Filly** foaled in 1917	12	9	6	4
45/-	65/-	54	**Filly** foaled in 1918	12	9	6	4
			Best Clydesdale Mare or Filly—Cawdor Challenge Cup, value 50 guineas. See Conditions below.[1]				
			PRIZE MONEY BY SOCIETY . £167				
			Total Prize Money for Draught Horses, £403				
			HUNTERS				
			President's Medal for best Hunter				
60/-	80/-	55	**Hunter Brood Mare**, with Foal at Foot . .	15	7	3	—
45/-	65/-	56	**Colt or Gelding**, for field, foaled in 1916—*in hand*	10	5	3	—
45/-	65/-	57	**Yeld Mare or Filly**, for field, foaled in 1916—*in hand*	10	5	3	—
45/-	65/-	58	**Colt or Gelding**, for field, foaled in 1917—*in hand*	10	5	3	—
45/-	65/-	59	**Filly**, for field, foaled in 1917—*in hand* . .	10	5	3	—
45/-	65/-	60	**Colt or Gelding**, foaled in 1918, the produce of thoroughbred Stallion or registered Hunter sire, out of Mare of any breed	10	5	3	—
45/-	65/-	61	**Filly**, foaled in 1918, the produce of thoroughbred Stallion or registered Hunter sire, out of Mare of any breed	10	5	3	—
			[2] **Best Hunter Filly** in Classes 57, 59, and 61, registered with a number, in the Hunter Stud-Book, or the entry tendered within a month of the award—Champion Gold Medal.				
45/-	65/-	62	**Mare or Gelding** foaled in 1915, to carry 13 st. 7 lb. and over—*in saddle*	15	7	3	—

[1] This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland (subject t the conditions of that Society) for the best Clydesdale Mare or Filly registered in the Clydesdal Stud-Book, entered in any of the Draught Horse Classes, at the Show at which it may be com peted for. The Cup must be won four times by an Exhibitor with different animals (but no necessarily in consecutive years) before it becomes his absolute property. The animal winnin this Cup must be certified free from hereditary disease. The winner of the Cup, other than th absolute winner, shall, before delivery thereof is made to him, give security to the Clydesdal Horse Society that he shall surrender the same to the Society and deliver it at the Society' office when called upon to do so. Until the Cup be won outright, the winner on each occasio will receive the Clydesdale Horse Society's Silver Medal as a memento of his winning the Cup.

[2] Given by the Hunters' Improvement and National Light Horse Breeding Society.

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS	HORSES	PREMIUMS First	PREMIUMS Second	PREMIUMS Third
			HUNTERS—*continued*	£	£	£
45/-	65/-	63	[1] **Mare or Gelding**, foaled in 1915, to carry under 13 st. 7 lb.—*in saddle*—£15, £7, and £3			
45/-	65/-	64	**Mare or Gelding**, foaled before 1915, to carry 13 st. 7 lb. and over—*in saddle*	15	10	5
45/-	65/-	65	**Mare or Gelding**, foaled before 1915, to carry under 13 st. 7 lb.—*in saddle*	15	10	5
			PRIZE MONEY BY SOCIETY £218			
			CONTRIBUTED PRIZES 25			
			HACKNEYS			
			(*All to be shown in hand*)			
			President's Medal for best Hackney in Classes 66 *to* 72			
60/-	80/-	66	**Brood Mare**, over 14 hands, with Foal at foot, or to foal this season to a registered sire	10	6	4
45/-	65/-	67	**Yeld Mare or Filly** foaled in 1916	8	5	3
45/-	65/-	68	**Filly** foaled in 1917	8	5	3
45/-	65/-	69	**Filly** foaled in 1918	8	5	3
			[2] **Champion Prize of £10**, or a Gold Medal of the same value, is offered by the Hackney Horse Society for best Mare or Filly in Hackney or Pony Classes, animals entered as "Extra Stock" being eligible.			
60/-	80/-	70	**Stallion** foaled in or before 1916, over 14 hands	10	6	4
45/-	65/-	71	**Entire Colt** foaled in 1917	8	5	3
45/-	65/-	72	**Entire Colt** foaled in 1918	8	5	3
			All animals entered in the above Hackney Classes must be registered in the Hackney Stud-Book except in Classes 69 and 72, and animals entered in these latter Classes must be eligible for entry in the Hackney Stud-Book. Entry forms must be accompanied by certificate to this effect from Mr F. F. Euren, 12 Hanover Square, London, W.			
			PRIZE MONEY BY SOCIETY £120			
			CONTRIBUTED PRIZES 10			

[1] Given by Royal Caledonian Hunt.

[2] A Mare 6 years old or more must have had a living foal. Winners of the Hackney Society's £10 Prize or Gold Medal in 1919, except at the London and Royal English Shows, excluded. The winner must be entered or accepted for entry in Hackney Stud-Book and certified free from hereditary disease. This Gold Medal is not redeemable.

HORSES

PONIES

(*Classes 73 to 76 will be judged by Hackney Judges*)

President's Medal for best Pony

Entry Fees Members	*Entry Fees* Non-Members	*Class*		*Premiums* First £	Second £	Third £	Fourth £
45/-	65/-	73	**Stallion,** 3 years old and upwards, 14 hands and under—*in hand*	5	3	2	–
45/-	65/-	74	**Yeld Mare, Filly, or Gelding,** 3 years old and upwards, over 13 and not over 14 hands—*in saddle*	5	3	2	–
45/-	65/-	75	**Yeld Mare, Filly, or Gelding,** 3 years old and upwards, over 12 and not over 13 hands—*in saddle*	5	3	2	–
45/-	65/-	76	**Yeld Mare, Filly, or Gelding,** 3 years old and upwards, 12 hands and under—*in hand*	5	3	2	–

(*See Champion Prize under Hackneys, p.* 83)

PRIZE MONEY BY SOCIETY . . £40

HIGHLAND PONIES

President's Medal for best Highland Pony

45/-	65/-	77	**Highland Pony Stallion,** 3 years old or upwards, not exceeding 14.2 hands	8	4	2	–
			[1] **Special Prize of £10** for the best Highland Pony Stallion, "Extra Stock" being eligible to compete				
45/-	65/-	78	**Highland Pony Entire Colt,** foaled after 1st January 1917	8	4	2	–
45/-	65/-	79	**Highland Pony Mare,** 3 years old or upwards, not exceeding 14.2 hands, yeld or with Foal at foot	8	4	2	–
			[2] **Special Prize of £10** for the best Highland Pony Mare, "Extra Stock" being eligible to compete				
45/-	65/-	80	**Highland Pony Filly,** foaled after 1st January 1917	8	4	2	–
			[3] **Special Prize of £15** for the best Highland Pony Stallion or Mare actually registered with a number in the National Pony Stud-Book, "Extra Stock" being eligible to compete.				

PRIZE MONEY BY SOCIETY . . £16
[4] CONTRIBUTED PRIZES . . 75

SHETLAND PONIES

(*All to be shown in hand*)

President's Medal for best Shetland Pony

40/-	60/-	81	**Stallion,** not exceeding 10½ hands, foaled before 1916	8	5	3	2
40/-	60/-	82	**Entire Colt,** not exceeding 10½ hands, foaled in 1916 or 1917	8	5	3	2

[1] Given by Mr C. W. Dyson Perrins of Ardross.
[2] Given by Mr P. B. Macintyre, Findon.
[3] Given by the National Pony Society.
[4] The Board of Agriculture for Scotland gives £40 towards these prizes.

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First	Second	Third	Fourth
			HORSES				
			SHETLAND PONIES—*continued*	£	£	£	£
40/-	60/-	83	**Mare**, not exceeding 10½ hands, with Foal at foot .	8	5	3	2
40/-	60/-	84	**Yeld Mare**, not exceeding 10½ hands . .	8	5	3	2
40/-	60/-	85	**Filly**, not exceeding 10½ hands, foaled in 1916 or 1917	8	5	3	2
40/-	60/-	86	[1] **Shetland Pony Mare**, four years old and upwards, entered or eligible for entry in the Shetland Pony Stud-Book, either with Foal at foot or Yeld, which has never won a prize—to be shown unshod, ungroomed, and in natural condition. Prize winners in Classes 83 and 84 not eligible—£5, £3, and £2.				
			[2] **Silver Medal** for the best Shetland Pony of the sex opposite to that of the winner of the President's Medal, entered or accepted for entry in the Shetland Pony Stud-Book.				
			PRIZE MONEY BY SOCIETY . . £90				
			CONTRIBUTED PRIZES . . . 10				
			[3] HORSES IN HARNESS				
			[4] *President's Medal for best animal in the Classes for Horses in Harness*				
45/-	65/-	87	**Yeld Mare, Filly, or Gelding**, any age, in Harness, 15 hands and upwards, to be driven in the ring	10	5	3	–
45/-	65/-	88	**Yeld Mare, Filly, or Gelding**, any age, in Harness, under 15 hands, to be driven in the ring .	10	5	3	–
			Special Prize for best Pony in Class 88, under 13 hands	5	–	–	–
			PRIZE MONEY BY SOCIETY . . £41				
45/-	10/-	89	[5] **Draught Gelding**, any age, in Harness, shown in cart or lorry, it being a condition that the horses must have been regularly worked in Edinburgh or Leith for a period of twelve weeks prior to the first day of the Show—the horses to be exhibited on Thursday 10th July only, and the prize-winners to take part, if required, in both parades on Thursday and Friday—£5, £3, £2.				
			PRIZE MONEY BY SOCIETY . . £918 0				
			CONTRIBUTED 140 0				
			CUPS, MEDALS, &c. . . . 312 10				
			Total Prizes for Horses . £1370 10				

[1] Given by "Four Lovers of the Breed," per Mr W. Mungall of Transy.
[2] Given by the Shetland Pony Stud-Book Society.
[3] Animals entered in other Classes may be entered in the Harness Classes at an additional fee of 5s. if they are eligible.
[4] *An animal that has won a President's Medal in another section in this Show shall not be eligible to compete for the Medal in this section.*
[5] Contributed by friends of the Clydesdale.

Shed accommodation for machines for Driving Competitions—Members, 10s.; Non-Members, 20s.

JUMPING COMPETITIONS

SPECIAL REGULATIONS

(*See also the Regulations on pages* 63 *to* 70)

1. Jumping Competitions will take place on the afternoons of Wednesday, Thursday, and Friday, the 9th, 10th, and 11th July, and on the evening of Thursday, 10th July.
2. *Entries* for each day's Competitions will close at the Secretary's Office in the Showyard at 6 P.M. on the preceding day. Entries are free for Evening Jumping on Thursday, and may be received till the beginning of the Competition.
3. *Entry Fees.*—Wednesday, £1; Thursday and Friday, 10s. for each class.
4. *Accommodation* for jumping horses will be provided as follows: Covered shed in which to stand during the day free of charge; or, on application to the Secretary not less than ten days before the opening of the Show, stalls or loose-boxes will be provided at a charge (in addition to the Entry Fee) of £2 for a stall and £3 for a loose-box, which must be paid along with the Entry Fee at the time of application.
5. Horses entered for jumping only need not enter the Showyard till 12 noon on the day of Competition, and may leave the Showyard at 6 P.M. each day.
6. *The Jumps* may consist of Single Hurdle, Gate, Double Hurdle, Wall, and Water Jump, power being reserved by the Society to alter these, as well as the Handicaps, as may be thought desirable.

CLASS		*First*	*Second*	*Third*	*Fourth*	*Fifth*
	WEDNESDAY.	£	£	£	£	£
1	**Horse or Pony** any height	20	15	10	5	3
	THURSDAY.					
2	**Horse or Pony** any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in Class 1	10	8	5	3	2
	FRIDAY.					
3	**Horse or Pony** any height, Handicap, hurdles and gate being raised 8 inches for the winner of the first prize, and 4 inches for the winner of the second prize in either of Classes 1 or 2—4 inches extra for the winner of the two first prizes in Classes 1 and 2 . .	10	8	5	3	2
	Champion Prize for most points in Prizes with one or more horses in above Classes—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; and Fifth Prize, one point—the money to be evenly divided in the event of a tie	10	—	—	–	–
	THURSDAY EVENING.					
4	**Horse or Pony** any height	10	8	5	3	2
	Total Prize Money for Jumping, £147					

Special Entry Forms for above Competitions to be had on application.

ENTRY FEES		CLASS		PREMIUMS			
Members	Non-Members			First	Second	Third	Fourth
			SHEEP				
			BLACKFACE	£	£	£	£
			President's Medal for best animal of Blackface breed				
			[1] **Paisley Perpetual Gold Challenge Cup**, value £300, for best animal of the Blackface breed, "Extra Stock" being eligible to compete.				
20/-	30/-	90	**Tup** above one shear	12	8	4	2
20/-	30/-	91	**Shearling Tup**	12	8	4	2
20/-	30/-	92	**Ewe** above one shear, with her Lamb at foot, shorn or unshorn	10	5	2	–
20/-	30/-	93	**Shearling Ewe or Gimmer**, shorn or unshorn	10	5	2	–
20/-	30/-	94	**Shearling Tup**, house-wintered or partly house-wintered, clipped bare on or after 1st April 1919, —no part of the animal having been clipped prior to that date. Sheep entered in Class 91 not eligible to compete for these prizes. The judges to have power to reject any animal *—[2] Prizes, £15, £10, £5, £3, and £2.				
20/-	30/-	95	**Shearling Tup**, which shall have been entirely out-wintered, and which shall not have been clipped before 1st May 1919. To be shown in *healthy breeding condition* †—[3] Prizes, £12, £9, £6, £3, £2, £1.				
			Group of Four Blackface Sheep, consisting of Aged Tup, Shearling Tup, Ewe, and Shearling Ewe or Gimmer, the three latter to be bred by exhibitor, "Extra Stock" being eligible to compete—[4] Prizes, £5, £3, and £2.				
			Blackface Tup, growing the best wool for manufacturing purposes, free from black spots and kemp, "Extra Stock" being eligible to compete —[5] Prizes, £3 and £2.				
20/-	30/-	96	**Blackface Tup Lamb** bred from a Ewe never out of the owner's possession—[5] Prizes, £3 and £2.				
			PRIZE MONEY BY SOCIETY . . £86				
			CONTRIBUTED PRIZES . . 88				

[1] This Cup, along with an endowment of £600, was provided from money collected in Paisley by the late Provost Muir MacKean, and is in commemoration of the Society's first Show at Paisley in 1913. This year the Cup is offered for the best animal of the Blackface breed. The animal winning the Cup must be certified free from hereditary disease. The winner of the Cup shall, before delivery thereof is made to him, give security to the Society that he shall surrender the same to the Society and deliver it at the Society's office when called upon to do so. The winner of the Cup on each occasion will receive a miniature replica in silver as a memento of his winning the Cup.

* A Declaration to be lodged with entry that the condition as to clipping has been strictly complied with. Form of Certificate may be obtained from Secretary.

† A formal Declaration must be made at time of entry that the conditions both as regards outwintering and clipping have been strictly adhered to.

[2] Given by Blackface Breeders in Mid-Lothian, per Captain W. W. Anderson, Colzium.

[3] Given by Breeders and friends, per Mr Alexander Cowan, Valleyfield.

[4] Given by Mr William Elliot, Lanark.

[5] Given by Mr J. Richmond, Kippenross.

ENTRY FEES Members	ENTRY FEES Non Members	CLASS		PREMIUMS First	Second	Third	Fourth
			SHEEP				
			CHEVIOT	£	£	£	£
			President's Medal for best animal of the Cheviot breed				
20/-	30/-	97	**Tup** above one shear	12	8	4	2
20/-	30/-	98	**Shearling Tup**	12	8	4	2
20/-	30/-	99	**Ewe** above one shear, with her Lamb at foot	10	5	2	–
20/-	30/-	100	**Shearling Ewe or Gimmer**	10	5	2	–
			[1] **Perpetual Challenge Cup**, value £25, gifted by Mr J. Borthwick, for best Sheep in the Cheviot Classes.				
			PRIZE MONEY BY SOCIETY £86				
			BORDER LEICESTER				
			President's Medal for best animal of Border Leicester breed				
20/-	30/-	101	**Tup** above one shear	12	8	4	2
20/-	30/-	102	**Shearling Tup**	12	8	4	2
			[2] **Gold Medal** for best male animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.				
20/-	30/-	103	**Ewe** above one shear	10	5	2	–
20/-	30/-	104	**Shearling Ewe or Gimmer**	10	5	2	–
			[2] **Gold Medal** for best female animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock-Book. Animals entered as "Extra Stock" not eligible.				
			PRIZE MONEY BY SOCIETY £86				
			HALF-BRED				
			President's Medal for best Half-Bred Animal				
20/-	30/-	105	**Tup** above one shear	10	7	3	–
20/-	30/-	106	**Shearling Tup**	10	7	3	–
20/-	30/-	107	**Ewe** above one shear	10	5	2	–
20/-	30/-	108	**Shearling Ewe or Gimmer**	10	5	2	–
20/-	30/-	109	**Three Ewe Lambs**	5	3	2	–
			PRIZE MONEY BY SOCIETY £84				

[1] Given by the Cheviot Sheep Society.
[2] Given by the Society of Border Leicester Sheep-Breeders.

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First	PREMIUMS Second	PREMIUMS Third
			SHEEP			
			OXFORD-DOWN			
			President's Medal for best Oxford-Down Animal	£	£	£
20/-	30/-	110	**Shearling Tup**	6	4	2
20/-	30/-	111	**Shearling Ewe or Gimmer**	5	3	2
			[1] **Best Shearling Tup** in Class 110, bred in Scotland, to be registered in Oxford-Down Flock-Book before prizes will be paid—£5, £3, and £2.			
			PRIZE MONEY BY SOCIETY . . £22			
			CONTRIBUTED PRIZES . . . 10			
			SUFFOLK			
			(*All sheep to be entered in the Flock-Book.*)			
			President's Medal for best Suffolk Sheep			
20/-	30/-	112	**Shearling Tup**	6	4	2
20/-	30/-	113	**Ewe** above one shear	5	3	2
20/-	30/-	114	**Shearling Ewe or Gimmer**	5	3	2
20/-	30/-	115	[2] **Tup Lamb**—£8, £5, and £3.			
20/-	30/-	116	[3] **Three Ewe Lambs**—£8, £5, and £2.			
			PRIZE MONEY BY SOCIETY . . £38			
			CONTRIBUTED PRIZES . . . 25			
			SHROPSHIRE			
			President's Medal for best Shropshire Animal			
20/-	30/-	117	**Shearling Tup**	6	4	2
20/-	30/-	118	**Shearling Ewe or Gimmer**	5	3	2
			PRIZE MONEY BY SOCIETY . . £22			
			FAT SHEEP			
20/-	30/-	119	**Three Fat Lambs**, any breed or cross, dropped in the year of the Show	5	3	2
			PRIZE MONEY BY SOCIETY . . £434			
			CONTRIBUTED 123			
			CUPS, MEDALS, &c. . . . 345			
			Total Prizes for Sheep . . £902			

[1] Given by Oxford-Down Sheep-Breeders' Association.
[2] £10 given by the Suffolk Sheep Society. [3] Given by the Suffolk Sheep Society.

*GOATS

President's Medal for best pen of Goats

OPEN CLASSES

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First	Second	Third
			[1]**Challenge Trophy**, value £10 10s., for the best Female Goat in the Show.	£	£	£
5/-	10/-	120	**Male Goat, Anglo-Nubian**, entered or eligible for entry in the Anglo-Nubian section of the Herd-Book, over one year	3	2	1
5/-	10/-	121	**Male Goat**, any other variety, over one year	3	2	1
5/-	10/-	122	**Female Goat, Anglo-Nubian**, entered or eligible for entry in the Anglo-Nubian section of the Herd-Book, over two years old	3	2	1
5/-	10/-	123	**Female Goat, Swiss or Anglo-Swiss**, over two years old	3	2	1
5/-	10/-	124	**Female Goat**, any other variety, over two years	3	2	1
5/-	10/-	125	**Goatling, Anglo-Nubian**, entered or eligible for entry in the Anglo-Nubian section of the Herd-Book, above one year and not exceeding two years old	3	2	1
5/-	10/-	126	**Goatling, Swiss or Anglo-Swiss**, above one year and not exceeding two years old	3	2	1
5/-	10/-	127	**Goatling**, any other variety, above one and not exceeding two years	3	2	1
5/-	10/-	128	**Female Kid, Anglo-Nubian**, entered or eligible for entry in the Anglo-Nubian section of the Herd-Book, not exceeding one year old	3	2	1
5/-	10/-	129	**Female Kid, Swiss or Anglo-Swiss**, not exceeding one year	3	2	1
5/-	10/-	130	**Female Kid**, any other variety, not exceeding one year	3	2	1
5/-	10/-	131	†**Milking Competition**, open to Classes 122, 123, 124, and 133 (animals two years and over)	3	2	1

CONFINED TO SCOTTISH EXHIBITORS

3/-	5/-	132	[2]**Stud Goat**, one year old and over, any variety —£3, £2, £1.			
3/-	5/-	133	**Female Goat**, in milk, any age	3	2	1
3/-	5/-	134	**Cottager's Goat**, in milk, any age (confined to Exhibitors with a rental of £10 and under).	3	2	1
			[1]**Special Prize** of £5 for the best Goat in Class 134.			
3/-	5/-	135	† **Milking Class** (confined to Class 134)	3	2	1

Prize Money by Society	£15 0
Prize Money by the British Goat Society	30 0
Prize Money by the Baroness Burton	18 0
Prize Money by the Board of Agriculture for Scotland	18 0
Prize Money by Scottish Breeders	10 0
Sir Thomas R. Dewar—Trophy, &c.	20 10
Total Prizes for Goats	**£111 10**

The Competition for Goats is recognised by the British Goat Society, which will give two Challenge Certificates (qualifying for the Annual Championship) for the best Male Goat not under one year old, and for the best Female Goat over two years old.

[1] Given by Sir Thomas R. Dewar, London—to be competed for annually.

[2] Given by Baroness Burton, Dochfour.

† The milk yielded by goats in the Showyard shall be the property of the Society.

* For Regulations see page 75.

ENTRY FEES Members	ENTRY FEES Non-Members	CLASS		PREMIUMS First £	Second £	Third £
			PIGS			
			President's Medal for best pen of Pigs			
			LARGE WHITE BREED			
20/-	30/-	136	**Boar** farrowed before 1918	6	3	2
20/-	30/-	137	**Boar** farrowed in 1918	6	3	2
20/-	30/-	138	**Boar** farrowed in 1919	4	2	1
20/-	30/-	139	**Sow** farrowed before 1918	6	3	2
20/-	30/-	140	**Sow** farrowed in 1918	6	3	2
20/-	30/-	141	**Sow** farrowed in 1919	4	2	1
			PRIZE MONEY BY SOCIETY £58			
			MIDDLE WHITE BREED			
20/-	30/-	142	**Boar**, any age	6	3	2
20/-	30/-	143	**Boar** farrowed in 1919	4	2	1
20/-	30/-	144	**Sow**, any age	6	3	2
20/-	30/-	145	**Sow** farrowed in 1919	4	2	1
			PRIZE MONEY BY SOCIETY £36			
			BERKSHIRE			
20/-	30/-	146	**Boar**, any age	6	3	2
20/-	30/-	147	**Boar** farrowed in 1919	4	2	1
20/-	30/-	148	**Sow**, any age	6	3	2
20/-	30/-	149	**Sow** farrowed in 1919	4	2	1
			PRIZE MONEY BY SOCIETY £36			
			Total Prize Money for Pigs, £130			

EXTRA STOCK

Animals not included in the Classes for Competition may be exhibited as Extra Stock and may receive Awards as follows:—Very Highly Commended, the Silver Medal; Highly Commended, the Medium Silver Medal; Commended, the Bronze Medal.

Animals entered as Extra Stock are eligible to compete for the President's Medals, whether former winners of these Medals or not. They are also eligible to compete for Special Prizes where the conditions of these prizes permit.

Entry fees—same as corresponding Classes.

POULTRY

First Premium—ONE SOVEREIGN; *Second Premium*—TEN SHILLINGS. In each Class in which there are six or more pens competing, a Third Prize of Five Shillings may be awarded, provided there is sufficient merit in the pens. Three or more Commendations may also be given—thus, Very Highly Commended, Highly Commended, and Commended.

Champion Medals are offered as follows:—

1. Best Cock, any Variety.
2. Best Hen, any Variety.
3. Best Cockerel, any Variety.
4. Best Pullet, any Variety.
5. Best Waterfowl.
6. Best Turkey.

Aged Birds must have been hatched previous to, and Cockerels and Pullets in, the year of the Show.

Entry Fees—Members, 3s.; Non-Members, 5s.

	Class
LEGHORN—	
White	1. Cock
	2. Hen
	3. Cockerel
	4. Pullet
Any other Colour	5. Cock
	6. Hen
	7. Cockerel
	8. Pullet
MINORCA	9. Cock
	10. Hen
	11. Cockerel
	12. Pullet
SCOTCH GREY	13. Cock
	14. Hen
	15. Cockerel
	16. Pullet
PLYMOUTH ROCK—	
Barred	17. Cock
	18. Hen
	19. Cockerel
	20. Pullet
Any other Colour	21. Cock or Cockerel
	22. Hen or Pullet
ORPINGTON—	
Black	23. Cock
	24. Hen
	25. Cockerel
	26. Pullet
Buff	27. Cock
	28. Hen
	29. Cockerel
	30. Pullet
White	31. Cock
	32. Hen
	33. Cockerel
	34. Pullet
WYANDOTTE—	
Gold or Silver	35. Cock
	36. Hen
	37. Cockerel
	38. Pullet
White	39. Cock
	40. Hen
	41. Cockerel
	42. Pullet
WYANDOTTE—*continued*	
Partridge	43. Cock or Cockerel
	44. Hen or Pullet
Any other Colour	45. Cock or Cockerel
	46. Hen or Pullet
RHODE ISLAND RED	47. Cock
	48. Hen
	49. Cockerel
	50. Pullet
FAVEROLLES	51. Cock
	52. Hen
	53. Cockerel
	54. Pullet
SUSSEX—	
Light	55. Cock
	56. Hen
	57. Cockerel
	58. Pullet
Any other Variety	59. Cock
	60. Hen
	61. Cockerel
	62. Pullet
DORKING—	
Coloured	63. Cock
	64. Hen
	65. Cockerel
	66. Pullet
Silver Grey	67. Cock
	68. Hen
	69. Cockerel
	70. Pullet
SCOTS DUMPY	71. Cock or Cockerel
	72. Hen or Pullet
INDIAN GAME	73. Cock
	74. Hen
	75. Cockerel
	76. Pullet
OLD ENGLISH GAME	77. Cock
	78. Hen
	79. Cockerel
	80. Pullet

Special Entry Forms for Poultry Classes.

	Class
BANTAM—	
Game	81. Cock
	82. Hen
Other than Game	83. Cock
	84. Hen
ANY OTHER RECOGNISED BREED	85. Cock
	86. Hen
	87. Cockerel
	88. Pullet
CROSS-BRED FOWLS FOR LAYING PURPOSES	89. Hen
	90. Pullet
DUCKS—	
Aylesbury	91. Drake
	92. Duck
Orpington	93. Drake
	94. Duck
Indian Runner	95. Drake
	96. Duck
Any other Variety	97. Drake
	98. Duck
GEESE	99. Gander
	100. Goose
TURKEYS	101. Cock
	102. Hen
TABLE POULTRY—	
(*a*) TABLE FOWLS—	
Any pure Breed	103. Pair of Cockerels
	104. Pair of Pullets
Game-Cross	105. Pair of Cockerels
	106. Pair of Pullets
Any other Cross	107. Pair of Cockerels
	108. Pair of Pullets
(*b*) DUCKLINGS FOR TABLE PURPOSES—	
Any Breed or Cross	109. Pair of Ducklings

AMOUNT OF POULTRY PREMIUMS, £190, 15s.

Special Entry Forms for Poultry Classes.

DAIRY PRODUCE

No Exhibitor to show more than one lot in any Class.

Entry Fees—Members, 6s.; Non-Members, 9s.

Class	Premiums. 1st. £	2nd. £	3rd. £	
1. Powdered Butter, not less than 7 lb.	4	2	1	
2. Fresh Butter, three 1-lb. rolls	4	2	1	
				£14
3. Cheddar Cheese, 56 lb. and upwards—£6, £4, £2, £1				13
4. Sweet-Milk Cheese, flat shape (from a dairy where all cheese is made flat shape) white in colour, made according to the Dunlop or other method—£4, £2, £1				7
5. Cheese, 14 lb. and under—£3, £2, £1				6
				£40

Special Entry Forms for Dairy Produce.

BEE APPLIANCES AND HONEY, &c.

OPEN CLASSES.

APPLIANCES

Entry Fees—2s. 6d. each.

Class	Premiums. 1st.	2nd.	3rd.
1. Collection of Hives and Appliances, to include amongst other articles the following:—Three Standard Frame Hives complete, fitted with arrangements for supering. A suitable outfit for a beginner in Bee-Keeping (this to be staged separate from the main outfit). Prices—at which the exhibitor must agree to supply similar articles for six months—to be affixed to each article. Fifty superficial feet allowed for staging	80/-	40/-	20/-
2. Best and most complete Standard Frame Hive for general use, unpainted	20/-	15/-	10/-
3. Best and most complete Standard Frame Hive for Cottager's use, unpainted, price not to exceed 25/-	20/-	15/-	10/-
4. Best exhibit showing improvements in Hives and Appliances	10/-	5/-	–

BEE APPLIANCES AND HONEY, &c.

OPEN CLASSES—*continued*

HONEY, &c.

Entry Fees—2s. 6d. each

Class	Premiums. 1st.	2nd.	3rd
5. Twelve Sections of Comb Honey	20/-	15/-	10/
6. Twelve Jars of Run or Extracted Light-Coloured Honey, approximate weight 12 lb.	20/-	15/-	10/
7. Twelve Jars of Run or Extracted Medium or Dark-Coloured Honey, excluding Heather, approximate weight 12 lb.	20/-	15/-	10/
8. Six Jars of pressed Heather Honey in liquid form, approximate weight 6 lb.	20/-	15/-	10/
9. Six Jars of Granulated Honey, approximate weight 6 lb.	20/-	15/-	10/
10. One shallow frame of Comb Honey for extracting purposes	20/-	15/-	10/
11. Products made with the aid of honey. Recipe to be attached	30/-	15/-	10/
12. Best display of Honey in any form staged in space 3 feet by 3 feet, height from table not exceeding 4 feet. Weight of honey not to exceed 100 lb.	60/-	30/-	20/
13. Best exhibit of not less than 2 lb. of Wax in any form, suitable for wholesale and manufacturing purposes	20/-	15/-	10/
14. Best exhibit of not less than 3 lb. of Wax made into shape for retail trade	20/-	15/-	10/
15. Observatory Hive with Queen and Bees	50/-	30/-	15/

(Confined to Scottish Exhibitors.)

16. Six Sections of Comb Honey	20/-	15/-	10/
17. Two Sections of Comb Honey	15/-	10/-	5/
18. Six Jars of Run or Extracted Light-Coloured Honey, approximate weight 6 lb.	20/-	15/-	10/

The Rosebery Silver and Bronze Medals respectively will be awarded by the Scottis Bee-Keepers Association to the winners of the greatest number of points, calculated o the following basis: 1st prize, 3 points; 2nd prize, 2 points; 3rd prize, 1 point. Winne must be at the time members or affiliated to the Scottish Bee-Keepers Association.

PRIZE MONEY BY SOCIETY, ... £24, 12s. 6d.
CONTRIBUTED BY THE SCOTTISH BEE-KEEPERS ASSOCIATION, . £24, 12s. 6d.

Special Entry Forms for Appliances and Honey.

RULES AND REGULATIONS.

1. All exhibits must be despatched in time to be delivered in the Showyard not later tha 8 A.M. on Tuesday, 8th July.
2. The number of the exhibit will be sent by the Secretary (as entered on the admissio ticket), and must be placed on every exhibit and on each detachable part of exhibit—viz., on th several parts of each Hive, on every section of Comb Honey, and on every jar of Extracted Honey The number must be gummed on the jar and not on the cap.
3. No card, trade mark, or name of the exhibitor may be placed upon any part of an exhibi Every article exhibited must be the property of the exhibitor, and all honey must have bee gathered, in the natural way, by bees, within the United Kingdom.
4. Comb Honey must be glazed on both sides, to protect the honey from injury. If pape edging is used, it must be of such a width as to leave 3½ inches by 3½ inches of glass clear of th lace paper.
5. All Run or Extracted Honey and Granulated Honey must be shown in Glass Jars holdin approximately 1 lb., except in Class 12.
6. No exhibitor shall be allowed to take more than one prize in any one class.
7. The Judge shall be empowered to withhold prizes in case of insufficient merit.

WOOL

Three Fleeces in each Entry. Entry Fee, 6s.

PURE BREED CLASSES

Class		Premiums. 1st. £	2nd. £	3rd. £	
	BLACKFACE.				
1.	*Ewe*	3	2	1	
2.	*Wedder*	3	2	1	
3.	*Hogg*	3	2	1	
	CHEVIOT.				
4.	*Ewe*	3	2	1	
5.	*Hogg*	3	2	1	
	BORDER LEICESTER.				
6.	*Ewe*	3	2	1	
7.	*Hogg*	3	2	1	
	HALF-BRED.				
8.	*Ewe*	3	2	1	
9.	*Hogg*	3	2	1	
	SHETLAND.				
10.	*Ewe*	3	2	1	
11.	*Hogg*	3	2	1	
					£66

TOTAL PRIZE MONEY FOR WOOL, £66.

Cheviot, Border Leicester, and Half-Bred Fleeces must be shown washed, and Blackface and Shetland Fleeces unwashed. All Fleeces must be shorn in the year of the Show from sheep bred and reared on, or regular stock of, the exhibitor's farm.

Special Entry Forms for Wool Classes.

ABSTRACT OF PREMIUMS.

(Champion Medals given by the Right Hon. THE EARL OF ROSEBERY, K.G., K.T.)

GIVEN BY THE SOCIETY.

Cattle	£855	0	0
Horses	918	0	0
Jumping Competitions	147	0	0
Sheep	434	0	0
Goats	15	0	0
Pigs	130	0	0
Poultry	190	15	0
Dairy Produce	40	0	0
Bee Appliances and Honey	24	12	6
Wool	66	0	0
Medals to Breeders, &c.	20	0	0
Prizes for Timber [1]	20	0	0
Carry forward	£2860	7	6

[1] Grant to Royal Scottish Arboricultural Society for Prizes for Timber.

ABSTRACT OF PREMIUMS—*continued*.

Brought forward				£2860 7 6

CONTRIBUTED PRIZES, CUPS, &c.

CATTLE.

*Fife and Kinross Perpetual Gold Challenge Cup	£200	0	0
Tweeddale Gold Medal	25	0	0
The Shorthorn Society, and 2 Medals	40	0	0
Mr J. Milne Henderson	26	0	0
*The late Sir George Macpherson Grant, Bart.	50	0	0
*The late Sir John Macpherson Grant, Bart.	50	0	0
Aberdeen-Angus Cattle Society	10	0	0
*"Dr Gillespie" Memorial Challenge Trophy	50	0	0
*Highland Cattle Society of Scotland (approximate)	89	5	0
Ayrshire Cattle Herd-Book Society	20	0	0
Board of Agriculture for Scotland	30	0	0
British Friesian Cattle Society (and 2 Medals)	25	0	0
			615 5 0

HORSES.

*Renfrewshire Perpetual Gold Challenge Cup	£250	0	0
"William Taylor" Memorial Committee	10	0	0
*Cawdor Challenge Cup	52	10	0
Hunters' Improvement and National Light Horse Breeding Society	10	0	0
Royal Caledonian Hunt	25	0	0
Hackney Horse Society	10	0	0
Board of Agriculture for Scotland	40	0	0
National Pony Society	15	0	0
Mr C. W. Dyson Perrins of Ardross	10	0	0
Mr P. B. Macintyre, Findon	10	0	0
"Four Lovers of Breed" (Shetland Ponies)	10	0	0
Shetland Pony Stud-Book Society (Medal).			
Friends of the Clydesdale	10	0	0
			452 10 0

SHEEP.

*Paisley Perpetual Gold Challenge Cup	£300	0	0
Blackface Breeders and friends, per Mr A. Cowan, Valleyfield	33	0	0
Blackface Breeders in Midlothian, per Captain W. W. Anderson, Colzium	35	0	0
Mr J. Richmond, Kippenross	10	0	0
Mr William Elliot, Lanark	10	0	0
*Borthwick Challenge Cup	25	0	0
Society of Border Leicester Sheep-Breeders	20	0	0
Oxford-Down Sheep-Breeders' Association	10	0	0
Suffolk Sheep Society	25	0	0
			468 0 0

GOATS.

British Goat Society	£30	0	0
Board of Agriculture for Scotland	18	0	0
Baroness Burton	18	0	0
Scottish Breeders	10	0	0
Sir Thomas R. Dewar (Prizes and *Trophy)	20	10	0
			96 10 0

BEE APPLIANCES AND HONEY.

Scottish Bee-keepers' Association (and 2 Medals)	24 12 6
	£4517 5 0

* Challenge Prizes.

JOHN STIRTON, *Secretary.*

3 GEORGE IV. BRIDGE,
EDINBURGH, *April* 1919.

The Society's Show for 1920 will be held at Aberdeen.

APPENDIX B

LIST OF MEMBERS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

ARRANGED ACCORDING TO COUNTIES AND SHOW DIVISIONS

Revised to 2nd April

1919

By the Charter of 1834 the Society consists of two classes, Ordinary and Honorary or Corresponding Members. The number of Honorary or Corresponding Members resident in the United Kingdom must not exceed twenty, but with power to the Society to elect as Honorary Associates persons resident abroad, not subjects of her Majesty, who may have been benefactors to the Society, or who are distinguished for their skill in Art or Science, provided that the number of such Foreign Associates shall not exceed twenty.

By a Bye-law passed in 1873, with reference to the Supplementary Charter of 1856, successful Candidates for the Society's Agricultural Diploma were thereby eligible to be elected free Life Members of the Society. This Bye-law was rescinded in 1900.

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January, and June or July. It is not necessary that the proposer should attend the meeting.

Higher Subscription.—The Ordinary Annual Subscription is £1, 3s. 6d., and the Ordinary Subscription for Life-Membership is £12, 12s.; or, after ten annual payments have been made, £7, 7s.

Lower Subscription.—Proprietors farming the whole of their own lands, whose Rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, and Veterinary Surgeons, and such other persons as, in respect of their official or other connection with agriculture, the Board of Directors may consider eligible, none of them being also owners of land to an extent exceeding £500 per annum, are admitted on a Subscription of 10s. annually, which may be redeemed by one payment of £7, 7s., and after eight annual payments of 10s. have been made, a Life Subscription may be purchased for £5, 5s., and after twelve such payments, for £3, 3s. Subscriptions are payable on election, and afterwards annually in January.

According to the Charter, "Any person elected an Ordinary Member of the Society who shall not have objected to his election, on the same being intimated to him by the Secretary, shall not be entitled to resign or withdraw his name as a Member of the Society, unless he shall have paid up his Life Subscription, or shall have previously settled and paid in Annual Contributions a sum equal to that fixed by the Society at the time of his election, to be paid by Members as the purchase of a Life Subscription in lieu and in redemption of the Annual Payments." The Life Subscription for a Member paying £1, 3s. 6d. is £12, 12s., and for a Member paying 10s., £7, 7s.

Members having Candidates to propose are requested to state whether the Candidate should be on the £1, 3s. 6d. or 10s. list.

Members of the Society receive the 'Transactions' free on application, and are entitled to consult the Chemist and Botanist at reduced rates—to apply for District Premiums and Long Service Medals — to report Ploughing Matches for the Medal—to free admission to the Showyard, and to exhibit Stock and Implements at reduced rates. Firms are not admitted as Members, but if one partner of a firm becomes a Member, the firm is allowed to exhibit at Members' rates.

Members having Candidates to propose are requested to send their names to JOHN STIRTON, Esq., 3 George IV. Bridge, Edinburgh.

By a Resolution of the Directors, 2nd February 1887, the list of Members, arranged according to Counties, has been so made up that no Member shall vote in more than one Show Division for the nomination of Directors. Members finding any mistakes are requested to report the same to John Stirton, Esq., 3 George IV. Bridge, Edinburgh.

The following is the List of Counties constituting the Show Divisions :—

	AGE
1. Glasgow, for the Counties of Argyll, Ayr, Bute, Lanark, and Renfrew,—	
Argyll	5
Ayr	7
Bute	10
Lanark	10
Renfrew	16
2. Perth, for the Counties of Fife, Forfar (Western District), Kinross, and Perth (Perth Show District),—	
Fife	20
Forfar (Western District)	24
Kinross	25
Perth (Perth Show District)	26
3. Stirling, for the Counties of Clackmannan, Dumbarton, Perth (Stirling Show District), and Stirling,—	
Clackmannan	30
Dumbarton	30
Perth (Stirling Show District)	31
Stirling	33
4. Edinburgh, for the Counties of Edinburgh, Haddington, and Linlithgow,—	
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LIST OF MEMBERS

ARRANGED ACCORDING TO COUNTIES AND SHOW DIVISIONS.

The Members marked have been Presidents, and † Vice-Presidents.*

HONORARY MEMBERS.

Admitted
1898*His Most Gracious Majesty THE KING
1903 Clarke, Sir Ernest, 31 Tavistock Square, London, W.C.
1905 Craik, Sir Henry, K.C.B., M.P., C.B., 5A Deans Yard, Westminster, London
1905 Elliott, Sir Thomas H., Bart., K.C.B., The Royal Mint, Tower Hill, London, E.
1903 Ewart, Professor J. Cossar, M.D., F.R.S., University, Edinburgh
1914 Hendrick, Professor James, Aberdeen
1913 Macdiarmid, John, Scottish Conservative Club, Edinburgh
1903 Ogilvie, F. Grant, C.B., Assistant Secretary, Board of Education, South Kensington, London, S.W.
1903 Plunket, Right Hon. Sir Horace, P.C., F.R.S., K.C.V.O., Kilteragh, Foxrock, Co. Dublin

FOREIGN ASSOCIATES.

Admitted
1903 Bang, Professor B., Copenhagen
1914 Fischer, Professor Emil, Hessische Strasse 2, Berlin, N.
1903 Stebler, Dr F. G., Zurich, Switzerland
1914 Wilson, Honourable James, Traer, Iowa, U.S.A.

1.—GLASGOW DIVISION.

EMBRACING THE

COUNTIES OF ARGYLL, AYR, BUTE, LANARK, AND RENFREW

ARGYLL.

Admitted
1898 Ainsworth, Sir John Stirling, of Ardanaiseig, Bart., M.P., Kilchrenan
1919 Ainsworth, Thomas, yr., of Ardanaiseig, Kilchrenan
1881 Allan, Alex., of Aros, Tobermory
1905 Allan, Bryce, Linndhu, Tobermory
1911 Anderson, John, B.Sc., N.D.D., Ivy Bank, Oban
1876 Anderson, R. Lang, Airds, Appin—*Free Life Member*
1901 Andrew, Matthew, Drimvore, Glassary, Lochgilphead
1915 Argyll, The Duke of, Inveraray Castle, Inveraray
1906 Armstrong, Thomas J. A., Glenborrodale, Acharacle, R.S.O.
1913 Bankier, William Albert, of Dunlossit, Islay
1915 Beaton, John, Willowbank, Dervaig, Mull
1918 Black, Malcolm, Estates Office, Campbeltown
1899 Blackburn, Major Hugh, Annat, Corpach
1900 Bontein, James S., of Glencruitten, Oban
1901 Brown, Archibald, Lochgilphead Hotel, Lochgilphead
1905 Bruce, Peter, Ach-na-Cloich, Connel, Argyll

Admitted
1881 Buchanan, Angus, *last known address*, Kilvarie, Connel
1900 Buchanan, Frank H., Kalmeta, Connel
1882 Cameron, Donald, *last known address*, Mossfield, Oban
1898 Cameron, Duncan, Sheepknowe, Bunessan
1907 Campbell, Alexander, Ardbeg, Port Ellen, Islay
1891 Campbell, Alexander E., The Oaks, Dalmally
1894 Campbell, Lieut. Col. Colin G. P., D.L., J.P., of Stonefield, Glenakil, Tarbert, Lochfyne
1875 Campbell, Captain D., of Inverneil and Ross, Ardrishaig
1882 Campbell, Edward P., Captain, 42nd Highlanders, South Hall, Colintraive
1885 Campbell, Lt.-Col. H. Burnley, of Ormidale, Colintraive
1909 Campbell, Captain John, of Kilberry, Argyllshire
1894 Campbell, John, Ardifuir, Kilmartin, Lochgilphead
1913 Campbell, John C., Doirchulin House, Dalmally
1910 Campbell, John Graham, yr. of Shirvan, Lochgilphead
1914 Campbell, Peter, Inverleiver, Glenetive, Taynuilt
1890 Campbell, Robert G. Graham, of Shirvan, Lochgilphead
1877 Clark, Andrew, Islay
1893 Clark, Francis William, of Ulva, Aros, Mull
1892 Coats, Major Andrew, Stonefield, Tarbert, Lochfyne
1898 Colthart, Robert D., Achateny, Ardnamurchan, Oban
1905 Colvill, John, Rockbank, Campbeltown
1899 Corson, Robert H., Auchindarroch, Duror, R.S.O.
1885 Corson, Thomas, Auction Mart, Oban
1901 Crawford, Robert, Upper Largie, Kilmartin
1870 Cuddon-Fletcher, Bernard James, of Dunans, Colintraive
1907 Cullen, Robert, Dunlossit Estate Office, Bridgend, Islay
1919 Davidson, George Alfred, Benmore Estates Office, Kilmun
1919 Dewar, Brig.-General James Edward, of Cladich, Inistrynich, Cladich, Argyllshire
1905 Dick, Matthew, Bank of Scotland, Campbeltown
1905 Dobie, John, Clydesdale Bank, Dunoon
1881 Duncan, R., Royal Hotel, Tighnabruaich
1893 Ferguson, Archibald, Lochaline, Morven
1897 Fletcher, John A., Laudale, Strontian
1874 Forsyth, James N. M., of Quinish, Tobermory
1898 Fraser, Charles James Roy, of Lochavich, Kilchrenan
1895 Fraser, Hugh, Auchinadrain, Tayinloan
1914 Galbraith, Robert, Ardnacross, Aros, Oban
1901 Gardner, John Neilson, Dail-an-Rois, Corpach
1889 Gemmell, John, Munaroy House, Campbeltown
1911 Gilchrist, Duncan, Trodigal, Campbeltown
1914 Gilchrist, John, Corran, Clachan, Kintyre
1913 Gillespie, Donald, Ardbeg and Lagavulin, Port Ellen, Islay

Admitted
1913 Gillies, Daniel, Balegreggan, Campbeltown
1891 Gillies, John, Barnacarry, Kilninver, Oban
1901 Graham, Alexander, Tonrioch, Campbeltown
1915 Graham, Dugald, West Backs, Campbeltown
1899 Graham, Robert F., of Skipness, Whitehouse
1894 Greig, James, 60 Main Street, Campbeltown
1912 Guthrie-Stirling, Mrs Olive, of Torosay, Craignure, Isle of Mull
1906 Hall, James M., of Tangy and Killean, Tayinloan, Kintyre
1913 Hall, Major William M'Alister, of Torrisdale, Carradale, Argyll
1888 Hamilton, George, Achadunan, Cairndow
1900 Hamilton, James T., *last known address*, Melfort, Kilmelfort
1896 Hay, Colin E., Ardbeg, Islay
1917 Hunter, James Adam, Kilfinichen, Aros, Mull
1889 Hunter, James A., Machribeg, Campbeltown
1913 Kerr, John, Neriby, Bridgend, Islay
1915 Lambie, Thomas, Land Steward, Glengorm, Tobermory
1912 Lamont, Sir Norman, of Knockdow, Bart., Toward Point
1905 Leschallas, Major John H. P., Glenfinart, Ardentinny, Greenock
1914 Lithgow, Miss, Glengorm Castle, Tobermory
1883 Lothian, James, Rockwood, Campbeltown
1896 MacArthur, Alexander, Banker, Oban
1905 M'Arthur, Archibald, Kilmory Farm, Lochgilphead
1905 M'Arthur, Neil, Meadows, Campbeltown
1907 MacColl, Donald, Creagan, So. Oban
1898 M'Coll, Duncan, Kildalton, Port Ellen, Islay
1881 Macdiarmid, H., Island House, Tiree, Oban
1882 Macdiarmid, Robert, Corries, Lochawe
1902 Macdonald, Harry L., of Dunach, Oban
1893 Macdonald, J. Ronald M., Largie Castle, Tayinloan
1908 Macdonald, T. Martin, of Barguillean, Taynuilt
1905 MacDougall, Major A. T., of Dunollie, Oban
1893 M'Dougall, John, Garvie, Glendaruel, Colintraive
1898 Macfarlane, John, Cladich, Dalmally
1873 Macfarlane, Lewis, Invermay, Douglas Pier, Lochgoil
1915 M'Geachy, James, Clochkeil, Campbeltown
1883 MacGregor, Donald, Solicitor, Oban
1914 M'Gregor, Duncan, Soroba Farm, Oban
1914 M'Innes, Hugh, Glenshellach, by Oban
1905 M'Intyre, Alexander, Kilbridemore, Glendaruel, S.O.
1891 Mackenzie, J. H. Munro, of Mornish, Tobermory
1896 Mackie, P. Jeffrey, Glenreasdell, Whitehouse, Argyll
1913 M'Lachlan, Dr Donald, Ballinaby, Islay
1905 M'Lachlan, Hugh, Stroneskar, Lochgilphead
1886 Maclachlan, of Maclachlan, Castle Lachlan, Strachur
1907 M'Laine, Alexander, 22 Alexandra Place, Oban
1915 M'Latchie, John, Bellfield, Campbeltown
1906 Maclean A. T. H. of Ardgour

Admitted
1897 Maclean, Roderick, Gomitra, Aros, Isle of Mull
1882 M'Nab, Robert, Beaconsfield, Dunoon
1897 M'Naughton, Duncan, Balino, Oban
1901 M'Neill, D. B., Lochhead, Ormsary, Ardrishaig
1891 Macpherson, Colin D., Corpach, Fort William
1907 Macrae, Kenneth, Seaforth, Oban
1906 M'Varish, Donald, Invercoe, Glencoe, R.S.O.
1905 M'Vean, John, Connel Ferry
1903 Malcolm, Colonel, of Poltalloch, C.B., Lochgilphead
1905 Maxwell, Robert, Baraskomil, Campbeltown
1894 Melles, Joseph, Gruline, Aros, Isle of Mull
1901 Miller, Robert, Torbhlaren, Glassary, Lochgilphead
1905 Mitchell, Hugh, Seafield, Campbeltown
1903 Mitchell, John, Killochonoch, Lochgilphead
1915 Mitchell, Samuel, Dalavaddy, Campbeltown
1915 Mitchell, Samuel, Killeonan, Campbeltown
1915 Mitchell, Thomas, Strath, Campbeltown
1905 Montgomery, James, M.R.C.V.S., Ardrishaig
1895 Morris-Cheape, Major C. H., of Killundine, Argyllshire
1910 Morrison, Hugh, of Islay, Bridgend, Islay
1878 Moubray, J. M., Strone House, Strone
1877 Munro, D. H. C., of Kenlochlaich, Appin
1905 Murray-Allan, R. A., of Glenfeochan, Kilmore, Oban
1915 Ollar, Alexander, Kilkerran, Campbeltown
1887 Orde, Sir A. J. Campbell, of Kilmory, Bart., Lochgilphead
1900 Philip, W. W., Estate Office, Gigha
1913 Ralston, R. Y., Macharioch, Campbeltown
1885 Ralston, Robert, Estate Office, Isle of Coll
1896 Ramsay, Iain, of Kildalton, Port Ellen, Islay
1897 Reid, Robert M., Toward Point, Toward
1913 Robertson, Alexander D., Argyll Chemical Works, Oban
1919 Robertson, Ian (Alex. Robertson & Sons), Argyle Chemical Works, Oban
1915 Ronald, Andrew, Dalmore, Campbeltown
1906 Ross, Alexander, General Merchant, Kilmartin
1914 Sandilands, John, Castles, Lochawe
1893 Scarlett, W. J. Yorke, of Gigha
1906 Sellar, Gerard Craig, Ardtornish, Morvern, Oban
1907 Sellar, Mrs Craig, of Ardtornish, Morvern, Oban
1892 Sellar, P., Achranich, Morvern.
1915 Slocock, Frederick E., Achanelid, Glendaruel
1911 Smith, Gilbert K., Benbuie, Lochbuie, Mull
1915 Smith, William J., Largiebeg, Kilchenzie, Kintyre
1905 Stalker, P., *last known address*, Auchadunan, Inveraray
1916 Steedman, J. W. E., S.S.C., Estates Office, Oban
1894 Stewart, Archibald, Parkfergus, Campbeltown

Admitted
1915 Stewart, William M., Darlochan, Campbeltown
1903 Struthers, Archibald, Dunolliebeg, Oban
1900 Turner, Charles, Innellan
1905 Weir, James, Baligreggan, Campbeltown
1906 Weir, John, Gallowhill, Campbeltown
1876 Whyte, D. C., Dailling Villa, Dunoon
1899 Young, Robert, Drumore, Campbeltown
1913 Young, Robert, Drurn, Campbeltown
1915 Young, Thomas, Cleongart, Ballochantie, Campbeltown
1887 Young, William, Glencraig, Campbeltown
1899 Younger, C. A. J., Benmore, Kilmun

AYR.

1882†Ailsa, The Marquis of, Culzean Castle, Maybole
1897 Aird, David, 80 Portland Street, Kilmarnock
1915 Aird, D. J. C., 28 Witch Road, Kilmarnock
1913 Alexander, Hugh, Rodgerton, Auchinleck
1914 Allan, James, The Cottage, Kilbirnie
1909 Alston, George, Loudonhill, Darvel
1907 Andrew, James, Muirhouse, Monkton
1897 Angus, Robert, Ladykirk, Monkton
1905 Angus, R. L., Ladykirk, Monkton
1908 Arthur, Alexander, Benston, New Cumnock
1907 Baird, Andrew, Garclaugh, New Cumnock
1899 Barr, Thomas, Hobsland, Monkton
1917 Beattie, John G., Mossmark of Old Mill, New Cumnock
1914 Bell, Sir James, Bart., of Montgreenan, Kilmarnock
1871 Bell, William, Royal Bank House Maybole
1897†Blair, Colonel Frederick G., of Blair, C.B., Dalry
1913 Bone, John, Merkland Farm, Kirkmichael, Maybole
1914 Bone, William, Auchencloigh, Galston
1911 Borland, James, Mossbog, Mauchline
1899 Boswell, J. D., of Garrallan, Cumnock (41 Northumberland Street, Edinburgh)
1900 Brackenridge, Alexander, Onthank, Kilmarnock
1890 Brodie, W. A. G., c/o Mrs Carmichael, Linfairn, Straiton, Maybole
1904 Brown, Francis Edward, Glengennet, Barr, Girvan
1914 Bruce, John, Tofts Grain Mills, Dalry
1908 Bryan, Robert, Orchardton Farm, Cumnock
1907 Caldwell, David, jun., Pennyfadzeoch Cumnock
1906 Caldwell, James, Cockhill, Dundonald
1894 Campbell, James Archibald, of Craigie, Ayr
1895 Caven, James, Roxburgh, St Ninians, Prestwick
1906 Clark, Alexander, Auchenlongford, Sorn
1895 Clark, James, Crossflatt, Muirkirk
1905 Clark, William Donald, Currah, Girvan
1877 Cochrane, James, 160 Main Street, Prestwick
1914 Craig, David, Hardcroft, Dalry
1897 Craig, James, Cunning Park, Ayr
1919 Craig, James, Netherwood, Muirkirk
1897 Craig, James, c/o John Craig, 32 Park Circus, Ayr
1915 Craig, John, Guelt, Old Cumnock
1888 Craig, John, High Ploughland, Darvel

Admitted
1895 Craig, John, 32 Park Circus, Ayr
1919 Crawford, Hugh, Newlands Farm, Monkton
1896 Crawford, John, Manraehead, Beith
1905 Crawford, Robert, Drumbeg, Turnberry
1878 Cross, Alexander, of Knockdon (19 Hope Street, Glasgow)—*Hon. Secretary of the Society*
1901 Cuthbertson, John, National Bank Buildings, Kilmarnock
1913 Dempster, James, Ladyton, Galston
1889 Dempster, James R., of Ladyton, Galston
1913 Donald, James D., Annandale, Crosshouse
1903 Donald, John H., Purroch Farm, Hurlford
1899 Donald, William, Fardale Hill, Kilmarnock
1907 Douglas, Mungo, Wester Hillhouse, Riccarton, Kilmarnock
1899 Douglas, Thomas A., M.R.C.V.S., Prestwick
1911 Dow, Thomas, Seed Merchant, Ayr
1913 Drennan, John, Hillhouse, Galston
1913 Drummond, Charles, Letterpin, Girvan
1901 Drummond, Robert, Pocknave, Hurlford
1901 Drummond, R. J., West of Scotland Agricultural College, Kilmarnock
1910 Dunbar, John D., Furnace Road, Muirkirk
1887 Dunlop, Andrew T. L., Lyonston, Maybole—*Free Life Member*
1912 Dunlop, G., jun., Gameshill, Stewarton
1869 Dunlop, Gabriel, Castle Farm, Stewarton
1896 Dunlop, James (Board of Agriculture for Scotland), Midland, Prestwick
1906 Dunlop, James, Oldhall, Fenwick
1875 Dunlop, Quintin, Morriston, Maidens, Ayr
1904 Dunlop, Quintin, jun., Greenan, Ayr
1897 Dunlop, William, Dunure Mains, Ayr
1914 Dunlop, William, Morriston, Maidens, Ayr
1907 Dykes, James, Hillhouse, Dundonald
1897* Eglinton and Winton, Earl of, Eglinton Castle, Irvine
1889 Fergusson, John B., Balgarth, Ayr
1909 Findlay-Hamilton, George Douglas, of Wesport and Carnell, Hurlford
1914 Frew, J. D., Glenlea, Ayr
1914 Frew, Thomas, St Elmo, Ayr
1901 Gairdner, William Cecil, Union Bank, Kilmarnock
1885 Gemmell, Andrew, Lugton Ridge, Beith
1904 Gibson, John, Dalstaith, Fenwick
1913 Glenarthur, Lord, Fullarton, Troon
1906 Goldie, David, Little Shewalton, Irvine
1914 Grey, James, Lambroughton, Kilmaurs
1897 Hamilton, James, Dunduff, Dunure, Ayr
1903 Hamilton, James, Langmuir House, Kilmaurs
1889 Hannah, John M., Girvan Mains, Girvan
1914 Harvey, Alexander, Trees Farm, Riccarton, Kilmarnock
1872 Hazle, Alexander, Merchant, Ayr
1897 Hendrie, John, Union Bank, Galston
1913 Highet, John, Wardend, Stewarton
1909 Houison-Craufurd, Brig.-General John Arch., Dunlop House, Dunlop
1913 Houison-Craufurd, Mrs Eleanor Louisa of Dunlop House, Dunlop
1899 Houldsworth, W. T. R., Kirkbride, Maybole
1913 Houston, John, Pinmacher, Girvan
1910 Howard-de-Walden, Lord, The Dean, Kilmarnock
1896 Howatson, Charles Nile, of Glenbuck, Glenbuck, N.B.
1897 Howie, James, Hillhouse, Kilmarnock
1897 Howie, John, 58 Alloway Street, Ayr

Admitted
1894 Howie, M. G., Towerlands, Irvine
1899 Howie, Thomas, jun., Maxwood, Galston
1919 Howie, William, Brieryside Farm, Monkton, Ayr
1917 Hunter, A. Thornton (Alexander Jack & Sons, Ltd.), Maybole
1915 Hunter, Hugh, Montfode, Ardrossan
1899 Hunter, John S., Foulton, Monkton
1915 Hunter, Robert, Montfode, Ardrossan
1919 Hunter, William, Templand Mains, Cumnock
1913 Hyslop, William, Auchensoul, Barr, Girvan
1897 Hyslop, William, Knockycoid, Barrhill
1904 Hyslop, William, of Bank, New Cumnock
1895 Inglis, Charles D., Stair House, Tarbolton Station
1911 Inglis, David, Stair House, Tarbolton Station
1877 Inglis, Robert, Loveston House, Girvan
1915 Johnston, John, East Nerston Farm, East Kilbride
1885 Johnstone, James, Alloway Cottage, Ayr
1888 Kennedy, James, of Doonholm, Ayr
1902 Kennedy, Norman, Doonholm, Ayr
1895 Kennedy, Roland F., of Finnarts, Glenapp, Ballantrae
1897 Kerr, John, Collennan, Troon
1897 Kerr, William, Houdston, Girvan
1896 Kilpatrick, James, Craigie Mains, Kilmarnock
1897 Knox, Sir James, Place, Kilbirnie
1912 Knox, William, of Moorpark, Kilbirnie, Ayrshire
1897 Laidlaw, T. K., Barra House, Largs
1910 Latta, Robert, Kyle Farm, Cumnock
1910 Latta, William, Boylston, Cumnock
1913 Limond, Thomas, 14 St Andrew Street, Ayr
1895 Lindsay, Thomas C., Aitkenbrae, Monkton, Ayrshire
1914 Logan, John, Bargenoch, Drongan
1915 Logan, Thomas, Low Milton, Maybole
1897 M'Candie, Donald, The Bungalow, Cumnock
1911 M'Connel, John W., Knockdolian, Colmonell
1913 M'Creadie, Andrew, Bellimore, Pinwherry, Girvan
1913 M'Creath, George, jun., Stoneyhill, Darvel
1913 M'Cubbin, John Gillespie, King's Arms Hotel, Maybole
1905 M'Cubbin, William D., Lochlands, Maybole
1914 M'Culloch, John, Laggan, Ballantrae
1888 Macdonald, D., Springfield, Largs, Ayrshire
1917 M'Fadzean, Hugh B. (Alexander Jack & Sons, Ltd.), Maybole
1918 M'Fadzean, William, Tourville, 35 Dundonald Road, Kilmarnock
1918 M'Gill, John Finlayson (M'Gill & Smith, Ltd.), Kyle Street, Ayr
1910 M'Gregor, William, Carngillan, Tarbolton
1910 M'Ilwrick, Gilbert, Kirkby, St Leonard's Road, Ayr
1910 M'Intyre, Thomas Walker, of Sorn, Sorn Castle, Mauchline
1887 M'Jannet, Archibald C., Irvine
1913 M'Kerrow, Thomas, Macnairston, Ayr
1919 M'Lanachan, William, Borland Farm, Old Cumnock
1910 Macrae, William, Royal Bank, Stewarton
1886 Manson, Anderson, Rhone, Dailly
1899 Maxwell, William, Sparnelbank, Galston
1896 Meikle, John, Camregan, Girvan

Admitted
1886 Middlemas, Wm., Solicitor, Kilmarnock
1903 Middleton, James, Estate Office, Braehead, Kilmarnock
1909 Millar, James, South Craig, Kilmarnock
1897 Millar, William, Nile Court, Ayr
1875 Mitchell, Andrew, Broomfield, 9 Broomfield Road, Ayr
1911 Mitchell, Andrew (Walter Mitchell & Sons), Ayr
1893 Mitchell, James, Springfield, Muirkirk
1897 Mitchell, Matthew, Agent, Ayr
1915 Mitchell, William, Bennan, Straiton, Ayr
1906 Mitchell, William, Grougar Mains, Kilmarnock
1907 Montgomerie, A. W., Lessnessock, Ochiltree
1909 Montgomerie, Lord, Redburn, Irvine
1893 Morton, Alexander, Gowanbank, Darvel
1919 Morton, Charles N., Clydesdale Bank, Limited, Cumnock
1914 Morton, David, Busby Farm, Crosshouse, Ayrshire
1892 Morton, William, Highbowhill, Newmilns
1913 Motherwell, A. J., Glencairn Mill, Kilmarnock
1915 Murray, Jacob, Carston, Ochiltree
1894 Murray, James, Low Ploughland, Darvel
1911 Murray, John, Muir, Cumnock
1900 Neill, Thomas, Shawhill House, Hurlford, Kilmarnock
1913 Neilson, Hugh, of Chapeltoun, Stewarton
1897 Neilson, Walter, Ewenfield, Ayr
1914 Neilson, Walter Kerr, County Club, Ayr
1914 Neilson, Walter P., Mount Charles, Ayr
1884 Niven, Richard, Airlie, Ayr
1870 Oswald, Richard A., of Auchincruive, Ayr
1897 Page, Andrew D., Culzean Home Farm, Maybole
1909 Page, Andrew R., Home Farm, Culzean Castle, Maybole
1907 Paterson, Wm., Wellpark, Kilmarnock
1888 Paton, Hugh (W. Samson & Co.), Kilmarnock
1899 Paton, R. Johnston (W. & T. Samson), Kilmarnock
1907 Patrick, Andrew C., Greenbank, Dalry, Ayrshire
1905 Pollock, Andrew, Engineer, Mauchline
1895 Reid, David H., Engineer, Ayr
1898 Richmond, Robert, *last known address*, c/o George Richmond, Ayr
1898 Robb, Daniel K., Graham Terrace, Stewarton—*Free Life Member*
1914 Robb, William, Hindsward, Old Cumnock
1901 Robertson, Alexander B., Dean Lodge, Kilmarnock
1902 Robertson, Philip, M.R.A.C., *last known address*, Sandhills, Monkton
1914 Ross, Hugh, Pennymore, Ochiltree, Ayrshire
1902 Rowallan, Lord, of Rowallan, Kilmarnock
1919 Russell, Thomas, Royal Bank of Scotland, Cumnock
1899 Salomons, P. A., *last known address*, Reidstone, Drongan
1906 Scott, C. C., of Halkshill, Largs
1906 Scott, David, Dumfries Estate Office, Cumnock
1915 Scott, William, Dalfram, Muirkirk

Admitted
1893 Shaw, D. W., 24 Sandgate, Ayr
1906 Shaw, James Edward, County Clerk, Ayr
1919 Sillars, Hugh, Whiteside Farm, Monkton, Ayr
1913 Sloan, James, Mainholm Farm, Ayr
1908 Sloan, John, Creoch, New Cumnock
1903 Smith, George, Mount Hamilton, Ayr
1913 Smith, John, Bruntwoodhill Farm, Galston
1903 Smith, John, Kilmaurs Mains, Kilmaurs
1912 Smith, R., Middleton, Dunlop
1914 Smith, Thomas, The Castle, Maybole
1906 Smith, William, Langholm, Dundonald
1882 Somervell, James, *last known address*, of Sorn, Mauchline
1879 Speir, Robert, Rosebank, Largs
1913 Speir, William, Burn Farm, Dalry
1906 Spiers, John G., Dyke, Dundonald
1905 Steel, John, Alton Albany, Barr
1914 Steel, Matthew, Stonecausay, Symington, Kilmarnock
1904 Steele, John, Shaw, Kilmaurs
1885 Stevenson, Allan, Architect, Ayr
1913 Stevenson, Allan, Parkhill Farm, Mauchline
1918 Stevenson, David, Changue Farm, Cumnock
1888 Stevenson, David, Silverwood, Kilmarnock
1915 Stevenson, James Hyslop, Rottinyard, New Cumnock
1888 Stevenson, John, Woodland, Girvan
1919 Stevenson, John S., Balig, Ballantrae
1906 Stevenson, Robert, Boghead, Galston
1909 Stevenson, William, Crossburn, Troon
1913 Stevenson, William, Royal Bank, Ardrossan
1911 Stewart, Major J. C. (Fasnacloich), 2 Cassillis Street, Ayr
1919 Symington, James, Kersepark Farm, Hollybush, Ayr
1894 Tannahill, Robert D., National Bank Buildings, Kilmarnock
1919 Tannock, Andrew, Underhills Farm, Craigie, Kilmarnock
1906 Taylor, William, Fortacres, Dundonald
1881 Tennant, James, 1 Marchmont Road, Ayr
1919 Tinsley, Joseph, Burns Avenue, Kilmarnock
1886 Tivendale, William D., Burnhouse, Galston
1905 Todd, George, Trochrague, Girvan
1905 Todd, Mrs George, Trochrague, Girvan
1913 Todd, Hugh, Harperland, Dundonald, Kilmarnock
1884 Turner, J. H., Portland Estate Office, Kilmarnock
1904 Tyre, James, Templeton, Dundonald
1873† Villiers, F. E., The Shieling, Ayr
1912 Wallace, David, Auchenbrain, Mauchline
1887 Wallace, H. R., Cloncaird, Kirkmichael, Ayr
1913 Wallace, James, Hillhead, Kilmarnock
1913 Wallace, John (Messrs Dixon & Wallace), Millburn, London Road, Kilmarnock
1919 Wardrop, David D., Knockterra Farm, Old Cumnock
1903 Wardrop, Patrick, Old Garlaff, Cumnock
1919 Wardrop, Robert R., Bankend Farm, Old Cumnock
1897 Watson, Alex., Barboigh, Mauchline
1905 White, John A., Royal Bank, Ayr
1906 Wilson, James, Ashmark, New Cumnock

Admitted
1905 Woodburn, Robert, Whitehill, Hurlford
1913 Wyllie, Alexander, Mossgiel, Mauchline
1911 Wyllie, Daniel, Holmes, Dalrymple, Ayr
1903 Young, Alexander, Muirhouse, Crosshouse, Kilmarnock
1896 Young, H. S. M., Heathfield, Irvine
1901 Young, James, Peatland, Dundonald
1910 Young, John, Skerrington Mains, Hurlford
1915 Young, William, Rench, Darvel
1878 Young, William, Sornhill, Prestwick
1914 Young, William, Threepwood, Galston

BUTE.

1870 Allan, James, Balnacoole, Shiskine, Arran
1897 Bannatyne, John, The Hotel, Lamlash
1907 Brown, William, Shedock Farm, Shiskine, Arran
1903†Bute, Marquis of, Mount Stuart, Rothesay
1905 Crawford, Peter, Torrylinn, Kilmorie, Arran
1889 Dickie, William P., Cranslagvourty, Rothesay
1875 Duncan, James, Glen Nevis, Marine Place, Rothesay
1892 Duncan, James L., Clutha Villa, Barone Road, Rothesay—*Free Life Member*
1915 Fairweather, James, Bute Estate Office, Rothesay
1913 Finlay, James Hamilton, Arran Estate Office, Brodick
1897 Fisher, James, Grain Merchant, Rothesay
1900 Forsyth, R. W., Corrie, Arran
1912 Graham, The Marquis of, Brodick Castle, Brodick
1906 Inglis, William, Forester, Sylvania, Brodick
1905 Johnston, James, Glencorrosdale, Lamlash
1912 Laidler, George, Factor, Strabane, Brodick
1902 Lochhead, Thomas, Kildavanan, Rothesay
1889 M'Alister, Robert, Mid Ascog, Rothesay
1889 Macfie, John, Allt-an-righ, Port Bannatyne, Rothesay
1917 Mackelvie, Donald, Merchant, Lamlash, Arran
1907 Martin, John G., Brandon, Brodick
1902 Martin, Mrs J. G., Brandon, Brodick
1913 Morton, James J., Machrie, Brodick
1879 Reid, F. Robertson, Loch Ranza, Isle of Arran
1913 Robertson, George, Arran Estate Office, Strabane, Brodick
1907 Speirs, Alexander C., Clachaig, Kilmorie, Arran
1902 Sweet, J. B., Bank of Scotland, Lamlash
1887 Wallace, John, 3 Hamilton Terrace, Lamlash

LANARK.

1919 Adamson, Walter, Harleyholm, Thankerton
1915 Adamson, William, Southholm, Thankerton
1915 Affleck, Archibald, Barnhills, Douglas Water, Lanarkshire
1915 Aitken, David, Lewinside, Carnwath

Admitted
1919 Aitken, James, Lewinside, Carnwath
1906 Aitkenhead, George, Lochinch, Govan
1875 Alexander, James, 145 North Street, Glasgow
1913 Alexander, J. D. (Pringle & Alexander), 17 Waterloo Street, Glasgow
1903 Alexander, James Y., 19 Hope Street, Glasgow
1883 Allan, Gavin, *last known address*, 54 Old Dumbarton Road, Glasgow
1892 Allan, Henry, 25 Bothwell Street, Glasgow
1912 Allinson, George H. (W. & T. Avery, Ltd.), Dumbarton Road, Partick
1915 Allison, Alexander, Head Inns Farm, Carnwath
1919 Allison, Alexander, High Whitehills, East Kilbride
1915 Allison, John, Carnwath Mill, Carnwath
1905 Alston, James T. R., Hyndford, Lanark
1919 Anderson, Angus M., Spango, Abington
1912 Anderson, James, sen., 144 Kenilworth Avenue, Shawlands, Glasgow
1909 Anderson, Robert, 341 Thistle Street (S.S.), Glasgow
1915 Arneil, Allan, Haininghead, Carluke
1918 Baillie, John, Calla, Carnwath
1907 Baillie, Robert, Morningside Farm, New Mains
1905 Baird, William, Gallowhill, Carmunnock
1913 Ballantyne, Andrew, Shotlin, Strathaven
1915 Ballantyne, George, Boat, Thankerton
1913 Ballantyne, Peter, M'Farlane Street, Glasgow
1913 Bankier, Alexander, Gartloch Farm, Gartcosh, Glasgow
1913 Banks, Thomas (Binney & Son, Ltd.), 43 Oswald Street, Glasgow
1907 Barr, Andrew, Dunsyre Mains, Dunsyre, Carstairs Junction
1913 Barr, Hugh, Muirfoot, Carstairs
1903 Barr, James, British Linen Bank, Carluke
1913 Barr, John, East Browncastle, Strathaven
1912 Barr, Samuel, Henshilwood, Braehead, Carnwath
1909 Barr, William, Burnhead, Carluke
1913 Barr, William, Greenbank, Carluke
1913 Barr, William, Harelaw, Carstairs
1919 Barrie, James, Mossplatt, Carstairs
1919 Barrie, Ninian, Kildare, Lanark
1915 Barrie, Ninian, Westshield, Carnwath
1912 Bathgate, Harry S., Woodneuk, Mount Vernon, Glasgow
1915 Baxter, David, Woodlands, Thankerton
1882 Beckitt, C. R. (British Oil & Cake Mills, Ltd.), Rockvilla Oil Mills, Port Dundas, Glasgow
1900 Begg, Hugh, M.R.C.V.S., County Buildings, Hamilton
1913 Begg, William, Upper Dunlop, Tollcross, Glasgow
1908 Berry, Reginald A., 6 Blythswood Square, Glasgow
1882 Bertram, A. D., *last known address*, Kersewell, Carnwath
1915 Bertram, Joseph, Gladstone Boreland, Biggar
1919 Bishop, A. Henderson, Thornton Hall, Thorntonhall Station
1913 Blackie, Gavin, Registrar's Office, Bellshill
1907 Blue, Allan P., 59 Pitt Street, Glasgow

Admitted
1914 Bone, John Scott (Thos. Hayman & Son, Ltd.), 26A Robertson Street, Glasgow
1905 Bonella, John, Cardowan, Stepps
1919 Bosomworth, William, 8 Wester Craigs, Dennistoun, Glasgow
1919 Bosomworth, William Francis, 8 Wester Craigs, Dennistoun, Glasgow
1900 Bouglas, Henry Brown, Banker, Carluke
1900 Boyd, Gavin, Newhouse, Lanark
1915 Boyd, W. Dawson, Parkboro, Lanark
1919 Brocket, John, Eastsidewood, Carnwath
1906 Brown, Harold G., of Cormiston, Biggar
1898 Brown, James, Merryton, Hamilton
1919 Brown, James, Westraw, Thankerton
1915 Brown, James A., Auchtool, Lesmahagow
1906 Brown, Joseph, High Merryton, Larkhall
1919 Brown, Thomas, Lockhart Mill, Lanark
1906 Brown, William, Auction Mart Co., Ltd., Biggar
1898 Brown, Wm. D., Photographer, Lanark
1913 Brownlee, Alex., Woodhall Farm, Chapelhall, Airdrie
1919 Brownlie, Thomas S., Earnock Muir, Hamilton
1919 Bryce, James, West Crofthill, Auchengray, Lanarkshire
1913 Bryson, Andrew, 93 Claythorn Street, Glasgow
1905 Buchanan, James, 65-67 Elcho Street, Glasgow
1876 Buchanan, Capt. J. R. G., of Scotstone, Eastfield House, Cambuslang
1913 Burns, John M. (Richard Hornsby & Son, Ltd.), 173A St Vincent Street, Glasgow
1915 Cadzow, Charles, Borland, Dunsyre, Carstairs Junction
1884 Cadzow, Robert, Weston, Dunsyre, Carstairs Junction
1905 Caldwell, James C., Hollylea, Crayton Road, Govan
1897 Cameron, John J. (A. & J. Main & Co.), Clydesdale Ironworks, Possilpark, Glasgow
1913 Campbell, Allan, Warrenhill Farm, Thankerton
1914 Campbell, Colin, 309 Golfhill Drive, Dennistoun, Glasgow
1904 Campbell, James (Campbell Gas Engine Co.), 104 Bath Street, Glasgow
1919 Capie, Alexander, Ingraston, Dolphinton
1894 Carmichael, Major M. H. D. Thomson, of Eastend, Thankerton
1905 Carnegie, William, 47 St Vincent Street, Glasgow
1905 Carruthers, Andrew, Nethertown, Auchenheath, Hamilton
1910 Carruthers, Richard B., 62-78 King Street, Tradeston, Glasgow
1880 Chaplin, Captain T. R., *last known address*, Lawhead House, Carnwath
1919 Chapman, Richard, Hangingshaw, Carstairs
1906 Chapman, William A., Cairngorm, Kennedy Drive, Airdrie
1882 Chapman, William W., Commonhead House, Airdrie
1913 Chassels, T., Muirhouse, Motherwell
1912 Chrystal, Alexander Graham, 82 St Vincent Street, Glasgow
1869 Clark, Mathew, 39 Westbourne Gardens, Kelvinside, Glasgow
1914 Clark, William, Woodhead Farm, Uddingston
1898 Clarkson, James, Prett's Mill, Lanark

Admitted
1898 Clarkson, Robert, Wandel, Abington, Lanarkshire
1919 Cleland, John, Dykehead Farm, Hamilton
1913 Clerk, Henry J., 15 Gordon Street, Glasgow
1899 Cochrane, James, Brownside, Strathaven
1890 Colebrooke, Lord, of Crawford, Abington
1919 Cooper, Isaac, Newbigging Mill, Carnwath
1913 Cooper, James, Muirhead, Carstairs
1919 Cooper, Robert, Collielaw, Carluke
1910 Cormack, D. G., Fairlaw, Stewarton Drive, Cambuslang
1913 Cossey, E. Elmer (Lawes' Chemical Manure Co., Ltd.), 118 Queen Street, Glasgow
1876 Coubrough, William, 144 Maclean Street, Plantation, Glasgow
1914 Cowan, Edward Stuart, 5 Oswald Street, Glasgow
1915 Cowan, Robert, Woodend, Abington
1892 Cowie, W. R., 93 Hope Street, Glasgow
1913 Craig, Andrew, 198 West George Street, Glasgow
1915 Craig, John, Westside, Nemphlar, Lanark
1915 Craig, William, Fallside, Lamington, Lanarkshire
1915 Craig, William, Glendona, Lanark
1884 Cranston, Stuart, 28 Buchanan Street, Glasgow
1912 Cross, Archibald, 19 Hope Street, Glasgow
1906 Cross, P. A. Munro, 19 Hope Street, Glasgow
1903 Cross, Sir William Coats, Bart., 19 Hope Street, Glasgow
1905 Cumming, James, *last known address*, Grain Merchant, Lanark
1897 Cumming, Robert, 151 St Vincent Street, Glasgow
1919 Currie, John, Callagreen, Carluke
1915 Cuthbertson, John M., Bankhead, Lanark
1919 Cuthill, George, Headsmuir, Carluke
1912 Denholm, Thomas, Greenhill House, Cleland
1895 Dennistoun, A. H. O., of Golfhill, Glasgow (Glenmore, Aviemore)
1914 Dewar, James, The Palace, Hamilton, Lanark
1890 Dewar, J. C., Thrush Park, Wishaw
1905 Dick, John, Carnbroe Mains, Bellshill
1884 Dick, John P., c/o M'Clure, Naismith, & Brodie, 77 St Vincent Street, Glasgow
1899 Dickie, Robert, c/o J. & W. Wallace, 498 Gallowgate, Glasgow
1905 Dickie, Wm., sen., Victoria Works, East Kilbride
1905 Dickson, Andrew, Castlehill, Carmunnock
1915 Dickson, John, Blackhill, Crossford, Carluke
1905 Dickson, John B., Auchren, Lesmahagow
1905 Donald, George, Braehead, Strathaven
1912 Donald, James, East Parkhead, Bellshill
1904 Donald, John, 36 North Wallace Street, Glasgow
1919 Donald, William, Brewshott, Carnwath
1905 Douglas, Charles, D.Sc., C.B., of Auchlochan, Lesmahagow
1910 Douglas, Peter C., 114 North Street, Charing Cross, Glasgow
1914 Dow, James, Wairds Lodge, Hamilton
1906 Duncan, George T. (Tangyes, Ltd.), 111 Hope Street, Glasgow

Admitted
1913 Dunlop, Matthew, 8 Graham Square, Glasgow
1889 Dunn, Richard, Udston, Hamilton
1869 Dykes, J., jun., 48 West George Street, Glasgow
1905 Dykes, Thomas, Priestgill, Strathaven
1907 Dykes, William, Hazliebank, Strathaven
1915 Elliot, Walter E., B.Sc., M.B., C.M., M.P., Muirglen, Lanark
1887 Elliot, William, Muirglen, Lanark
1909 Ewing, Arthur Ramsay, Ph.D., Empire Chemical Works, Carntyne Station, Glasgow
1900 Ferguson, Alex., of Clelland, *last known address*, 21 Sandyford Place, Glasgow
1897 Ferguson, James, 33 St George's Road, Glasgow
1903 Findlater, George, Jerviswood Mains, Lanark
1919 Findlater, Richard, Jerviswood Mains, Lanark
1884 Findlay, John, Springhill, Baillieston
1898 Findlay, M. F., 19 Cadogan Street, Glasgow
1913 Findlay, Peter, Brackenbrae, Bishopriggs
1910 Findlay, Robert, Easter Cadder, Kirkintilloch, Lanarkshire
1900 Fleming, Alexander, Wolfclyde, Biggar
1915 Fleming, Andrew, Smithycroft, Hamilton
1899 Fleming, Andrew, West Mains, Newbigging, Carnwath
1888 Fleming, David, Orchard Cottage, Broomhouse, Glasgow
1915 Fleming, James, Hawkwood, Strathaven
1905 Fleming, James, Meadowflat, Thankerton
1882 Fleming, James, Muirside, Carmunnock
1912 Fleming, James, 19 Townhead Street, Hamilton
1870 Fleming, J., Meadowbank Cottage, Strathaven
1905 Fleming, Stephen, Raith Farm, Bothwell
1905 Fleming, William, Corbiehall, Lanark
1905 Fleming, William, Fishieston, Rutherglen
1882 Fleming, William, Windlaw, Carmunnock
1914 Fleming, William Gilmour, 31 Robertson Street, Glasgow
1915 Ford, Andrew, Easter Farm, Uddingston
1903 Forrest, John, Brewshott, Carnwath
1906 Forrest, Mat. Harry, *last known address*, Woodhall, Bishopbriggs
1915 Forsyth, Alexander, Hillend, Roberton, Abington
1907 Forsyth, R. W., Hillend, Roberton, Abington
1888 Fowler, John, *last known address*, 2 Grantly Gardens, Glasgow
1919 Frame, Hugh, Gladstone, Biggar
1919 Frame, Robert, Carlinside, Lanark
1899 Fraser, George J. J. H. G., Factor, Dalzell Farm, Motherwell
1912 French, Samuel, Sherifflats, Thankerton
1914 French, William Edward, Netherton, Crawfordjohn, Abington
1919 Frood, William, Millmoor, Sandilands, Lanark
1905 Galbraith, Adam, Biggarshiels, Biggar
1906 Galloway, A. W. (Molassine Co., Ltd.), 219 St Vincent Street, Glasgow
1893 Galloway, Thomas, Balgray House, Kelvinside, Glasgow
1905 Garrawav, Andrew B. Law Muir, East Kilbride

Admitted
1905 Giffen, Andrew, Baltic Chambers, 3 Cadogan Street, Glasgow
1905 Giffen, W. R., Baltic Chambers, 3 Cadogan Street, Glasgow
1891 Gilchrist, John, Orbiston Mains, Bellshill, Glasgow
1915 Gilchrist, John, The Law, Thankerton
1905 Gillies, Alexander, Greenbank, Bothwell
1877 Gillies, William, 23 University Gardens, Glasgow
1882 Gilmour, Arthur, Crosshill, East Kilbride
1915 Gilmour, John, Viewpark, Muirend, Cathcart
1894 Glen, William, *last known address*, 32 Berkeley Terrace, Glasgow
1917 Good, William, Home Farm, Hartwood, Lanark
1887 Goodwin, John, *last known address*, Clydeview, Motherwell
1915 Gordon, G. P., B.Sc., 30 Renfield Street, Glasgow
1893 Gordon, Henry Erskine, of Aikenhead, Cathcart
1883 Gow, Andrew, 40 Millbrae Crescent, Langside, Glasgow
1909 Graham, George, 21 Port Dundas Road, Glasgow
1915 Graham, William, Kilgarth, Coatbridge
1873 Grahame, James, *last known address*, Western Club, Glasgow
1907 Greenshields, John B., West Town, Lesmahagow
1897 Grierson, Adam, New Cross, Strathaven
1897 Grieve, R. W., *last known address*, Carmacoup, Douglas
1893 Gunn, Edmund J., 186 West George St., Glasgow
1883 Gunn, John, 126 Onslow Drive, Dennistoun, Glasgow
1919 Hall, John, Craigarden, Albany Drive, Lanark
1906 Hamilton of Dalzell, Lord, Dalzell, Motherwell
1881 Hamilton, Alexander, Commercial Bank of Scotland, Ltd., Glasgow
1914 Hamilton, A. H., jun., Possilpark Paint Works, Glasgow
1895 Hamilton, C. G. Henderson, of Dalserf, Netherburn
1897 Hamilton, D., M.R.C.V.S., Bourtrechill, Hamilton
1889 Hamilton, Gavin, British Linen Bank, Lesmahagow
1914 Hamilton, H. Archibald, 160 Bardowie Street, Possilpark, Glasgow
1881 Hamilton, James A., *last known address*, 11 Hayburn Street, Partick
1906 Hamilton, James Brown, Poniel, Douglas
1905 Hamilton, John, Deadwaters, Kirkmuirhill
1915 Hamilton, John M'Lean, Bent, Kirkmuirhill, Lanarkshire
1870 Hamilton, John Nisbet, Coulter, Biggar
1905 Hamilton, Matthew G., of Woolfords, Cobbinshaw
1915 Hamilton, Robert, Hill of Kilncadzow, Carluke
1893 Hamilton, Robert, Low Motherwell, Motherwell
1905 Hamilton, Samuel, National Bank, Carluke
1897 Hamilton, T. B., M.R.C.V.S., 183 Queen's Drive, Glasgow, S.S.
1913 Hamilton, William, Castlehill Farm, Kilncadzow, Carluke

Admitted
1918 Hamilton, William, Cransley, Douglas, Lanarkshire
1905 Hamilton, William, Easterseat, Carluke
1919 Hamilton, William, Low Mains, East Kilbride
1905 Hamilton, William, Moat Mains, Lesmahagow
1915 Hamilton, William, Westtown, Kilncadzow, Carluke
1903 Harper, P. Rankin, Chilean Nitrate Committee, 131 West Regent Street, Glasgow
1919 Harrison, George, Newlands Farm, Uddingston
1919 Harvie, James, Midtown of Blackwood, Kirkmuirhill
1897 Hastie, David, Stonefield Farm, Blantyre
1905 Hastie, John, Eddlewood, Hamilton
1905 Hastie, Peter, Stonefield, Blantyre
1908 Hay, Alexander Beith, Kelvindock Chemical Works, Maryhill
1915 Henderson, James, Cornhill, Biggar
1919 Henderson, John, Lee Meadow, Carluke
1914 Hendry, George, Dalrymple House, Cleland
1912 Hogg, Thomas, 19 Hope Street, Glasgow
1901 Hope, Thomas, South Brownhill, Strathaven
1910 Hosie, William, Gallowhill Farm, Lenzie
1897 Howie, Robert (P. & R. Fleming & Co.), St Germains, Bearsden, Glasgow
1904 Howie, Robert, 21 Hope Street, Glasgow
1905 Hunter, Alexander N., 89 Mitchell Street, Glasgow
1919 Hunter, Hope William, Glenochar, Elvanfoot, Lanarkshire
1869 Hunter, William, Craighead, Abington
1914 Hutcheson, D., "Hawarden," Albany Drive, Lanark
1910 Imrie, William G., Blackhill, Maryhill, Glasgow
1919 Irving, James, Wellheads, Carstairs
1899 Jack, Robert, Implement Agent, Hynd-ford House, Lanark
1919 Jack, Thomas Purdie, Easthills, Dunsyre
1908 Jack, William C., Robiesland, Lanark
1913 Jackson, Archibald, Polmadie Dairy, Polmadie Road, Glasgow
1909 Jackson, James, 84/8 Gallowgate, Glasgow
1884 Jackson, James, Wakefield Terrace, Clarkston, Glasgow
1913 Jackson, John, Polmadie Dairy, Polmadie Road, Glasgow
1913 Jackson, John, Whitehill Farm, Stepps, Glasgow
1919 Jackson, Laurence, Broomlands, Symington, S.O., Lanarkshire
1919 Jackson, Robert, Chesterhall, Symington, S.O.
1915 Jackson, William K., Broomlands, Symington, Lanarkshire
1903 Johnston, George, jun., Craig Park, Kennedy Drive, Airdrie
1893 Johnston, George, *last known address*, Mosesfield, Springburn, Glasgow
1903 Johnston, Robert, Turnberry, Cardonald, Govan
1915 Johnstone, Thomas, jun., Darnfillan, Lesmahagow
1919 Johnstone, William, Carlindean, Carnwath
1914 Jones, William Felix, Glencairn, Broompark Drive, Lesmahagow

Admitted
1893 Kennedy, M. H., 23 Kingsborough Gardens, Kelvinside, Glasgow
1913 Kent, James, Parkhead, Glasgow
1888 Kerr, James, West Port, Lanark
1914 Kerr, James, 103 Bath Street, Glasgow
1905 Kerr, Matthew, Old Manse, Hamilton
1917 Kerr, Neil T., M.B., C.M., Lanark District Asylum, Hartwood, Lanark
1902 Kerr, Norman M., 13 Atholl Gardens, Kelvinside, Glasgow
1915 King, James, East Netherton, Wishaw
1915 King, John, West Netherton, Wishaw
1900 KING, Sir John W., Bart. of Carstairs, Carstairs House, Lanark
1914 King, Robert (Springburn Brick and Tile Co.), Hawthorn Street, Springburn, Glasgow
1915 Kirkhope, William G., 16 North Gardner Street, Partickhill, Glasgow
1907 Kirkwood, Charles, F.S.I., 61 West Regent Street, Glasgow
1915 Kirkwood, John, N.D.A., Scorrieholm, Lesmahagow
1919 Kitchin, George Shiach, 116 Nithsdale Road, Pollokshields, Glasgow
1913 KNOX, C. E., 13 Montgomerie Quadrant, Kelvinside, Glasgow
1891 Laidlaw, John, 98 Dundas Street, Glasgow, S.S.
1913 Lamb, John Swan, Crookboat, Sandilands Station, Lanark
1882 Lamberton, Andrew, Sunnyside Works, Coatbridge
1884 LAMINGTON, Lord, Lamington House, Lamington
1906 Lang, Benjamin, Solicitor, Halkerton, 56 Dumbreck Road, Glasgow
1895 Lawrie, James, West Newton, Strathaven, Lanarkshire
1915 Lawson, Andrew S., Guildhouse, Forth, Lanark
1919 Leiper, William, Crofthead, Carnwath
1898 Logan, Robert J., Eastshield, Carnwath
1911 Lohoar, J., Lochlyock, Thankerton
1919 Lyon, John, Quothquhan Mill, Thankerton
1919 Lyon, William, Libberton Mains, Carnwath
1885 M'Alpine, A. N., Glasgow and West of Scotland Technical College, 6 Blythswood Square, Glasgow—*Botanist to the Society*
1908 M'Andrew, Rev. T. W., The Manse, Carmichael, Thankerton
1907 M'Arthur, James C. C., Nunnerie, Abington
1905 M'Arthur, John, 202 Hunter Street, Glasgow
1889 Macaulay, J. F., Cairncraig House, Tollcross, Glasgow
1899 M'Cowan, Robert, Westdene, Strathaven
1899 M'Culloch, David, The Inn, Forth, Lanarkshire
1902 M'Cutcheon, James, F.C.S., 6 Blythswood Square, Glasgow
1913 M'Donald, William (M'Kinnon & M'Donald), 67 Hope Street, Glasgow
1910 M'Gregor, James, Garrion Grain Mills, Wishaw
1915 MacGregor, R. Douglas, of Wiston Lodge, Lamington
1919 M'Gregor, Thomas B., Lesser Linn, Lanark
1913 M'Gregor, William, Westhorn Farm, Tollcross, Glasgow
1884 M'Intosh, James, *last known address*, 6 Barrington Drive, Glasgow

Admitted
1914 Mackenzie, D., Afton, Busby
1919 Mackie, Robert, Jerviswood, Lanark
1896 M'Kinlay, Robert, Hillhouse, Sandilands, Lanark
1915 M'Lachlan, Duncan, 96 Queensborough Gardens, Hyndland, Glasgow
1907 M'Lean, Peter, 5 Calderwood Road, Rutherglen
1913 Maclellan, George S., 129 Trongate, Glasgow
1915 Macmillan, John A., of Dalquhandy, Coalburn, Lanarkshire
1886 M'Min, Thomas M'C., *last known address*, 76 Hill Street, Glasgow
1882 M'Neilage, A., 93 Hope Street, Glasgow
1875 M'Pherson, D., Ardlarach, Mount Vernon, N., Glasgow
1906 M'Sorley, P., 44 Jamaica Street, Glasgow
1919 M'Vitae, John B., 27 Langside Place, Langside, Glasgow
1918 Main, George R., Clydesdale Iron Works, Possilpark Glasgow
1879 Main, R. R. (A. & J. Main & Co.), Possil Park, Glasgow
1900 Mair, John, Carrick Lodge, Mount Vernon, Lanarkshire
1919 Malcolm, William, M.A., M.B.E., Secretary, Agricultural Food Production Committee for Lanark, and Director of Education, Holmhurst, Airdrie
1904 Maltman, W. P., 19 Hope Street, Glasgow
1919 Mann, John, Woodlands, Symington, S.O., Lanarkshire
1899 Marshall, Archibald, Auctioneer, Carluke
1889 Marshall, James, Airbles, Motherwell
1906 Marshall, Richard, Whitecraighead, Cleland, Motherwell
1906 Martin, James, Burnside, Strathaven
1906 Martin, John Douglas, 19 Hope Street, Glasgow
1915 Masterton, James, Bamflatt, Biggar
1919 Mather, Arthur, Westbank, Lanark
1913 Meikle, Allan, Alton, Tollcross, Glasgow
1906 Meikle, James, Netherton Farm, Lanark
1919 Meikle, James, Corramore, Sandilands, Lanark
1884 Millar, John, 118 Queen Street, Glasgow
1892 Millar, John, Fern Hill, Cathkin, Rutherglen
1904 Miller, J. C., North of Scotland and Town and County Bank, Ltd., 67 St Vincent Street, Glasgow
1914 Mills, J. K., 50 Robertson St., Glasgow
1906 Milne, James, Estate Office, Carstairs, Carstairs Junction
1907 Mitchell, David, 82 St Vincent Street, Glasgow
1894 Mitchell, John, 18 Shaftesbury Street, Glasgow
1894 Mitchell, Robert, 18 Shaftesbury Street, Glasgow
1905 Mitchell, Thomas, Nethanfoot, Crossford, Carluke
1905 Mitchell, William, Hazelside, Douglas
1918 Moffat, Andrew, Craigiehall, Carnwath
1912 Moffat, David, 31 St Vincent Place, Glasgow
1905 Montgomery, John, Dalserf Estate Office, Netherburn
1919 Moorcroft, James, Netherhill, Abington, Lanark
1875 Morton, J., Whelphill, Abington
1905 Morton, James, East Dykes, Strathaven

Admitted
1905 Motherwell, Andrew, Hay and Grain Merchant, Gorbals, Glasgow
1906 Moyes, John, 142 Waterloo Street, Glasgow
1915 Muir, George, East Crofthill, Carnwath
1918 Muir, Robert, East Whitecastle, Biggar, Lanark
1915 Muir, Thomas, Easter Sills, Thankerton
1906 Muirhead, John, Glencotho, Lanark
1915 Muirhead, Thomas, Greentowers, Lanark
1915 Muirhead, William W., Greentowers, Lanark
1918 Mungall, Robert, Ardenlea Cottage, Braidwood, Carluke
1905 Murdoch, Alexander, C.A., 94 Hope Street, Glasgow
1913 Murdoch, James, Carntyne, Shettleston
1905 Murdoch, James, Haughhead, Uddingston
1875 Murdoch, John, Carntyne, Shettleston
1905 Murdoch, Robert, West Hallside, Newton, Glasgow
1893 Murdoch, William, 3 Eglinton Lane, Glasgow
1913 Murr, Lady Georgeana, Hall of Caldwell, Uplawmoor, Glasgow
1914 Murray, David, Rockview House, Maryhill, Glasgow
1918 Murray, John Drummond, 64 Lymburn Street, Glasgow
1874 Murray, Robert G., of Spittal, Biggar
1903 Murray, T. B., Heavyside, Blackwood, Biggar
1875 Napier, John S., of Lethame, Strathaven
1915 Neilson, George, Skeoch Farm, East Kilbride
1919 Neilson, Thomas, Park, East Kilbride
1867 Neilson, William, Strathview, Bellshill
1889 Newbigging, Thomas, Crookboat, Sandilands, Lanark
1897† Newlands, Lord, Mauldslie Castle, Carluke
1915 Nimmo, Thomas, Wilsontown Farm, Forth, Lanark
1900 Pate, James, West Browncastle, Strathaven
1905 Pate, Thomas, Muirsland, Lesmahagow
1913 Pate, Thomas J., Corsebank, Lesmahagow
1918 Paterson, Alex. P., of Carmacoup, Douglas, Lanarkshire
1906 Paterson, George Rankin, Drumalbin, Thankerton
1882 Paterson, John, Candy Cottage, Biggar
1919 Paterson, John, Eastmains, Carnwath
1908 Paterson, Robert, Greenshields, Carnwath
1915 Paterson, Robert, Boghall Cottage, Biggar
1919 Paterson, Robert, Stamperland, Clarkston, Busby
1919 Paterson, Robert Cadzow, Greenshields, Carnwath
1915 Paterson, Principal William G. R., West of Scotland Agricultural College, 6 Blythswood Square, Glasgow
1896 Paterson, William, Glentaggart, Douglas
1884 Paterson, William, Grange, Thankerton
1919 Paton, David French, Glengeith, Elvanfoot
1885 Paton, James, Croftdene, Crawford, Abington
1915 Paul, Alexander, 93 Almada Street, Hamilton

Admitted
1913 Paul, Andrew, jun., 14 Caithness Street, Glasgow
1897 Pearson, J. M., C.E., Over Letham, Strathaven
1914 Peat, James, jun., The Brae, Lesmahagow
1919 Penrice, Robert Frame, Gowanside, Carluke
1903 Pooley, John S., 69 M'Alpine Street, Glasgow (Eblana, Thorn Drive, Bearsden, Dumbartonshire)
1919 Porteous, James, Commercial Buildings, Forth
1907 Prentice, Archibald, Belstone, Carluke
1919 Prentice, George, Lindsaylands, Biggar
1899 Prentice, Thomas, Saddler, Carluke
1914 Prentice, Thomas, Loancroft, Uddingston
1915 Provan, A. H., Gateside, Douglas, Lanarkshire
1913 Ramsay, Thomas, Cadzow Villa, Carluke
1910 Rankin, James Macnaughton, 110 Bath Street, Glasgow
1898 Rankin, William B., of Cleddans, Airdrie
1919 Rannie, John Edgar, 318 Onslow Drive, Dennistoun, Glasgow
1919 Reid, Alexander, Coursington Street, Motherwell
1919 Reid, Charles, The Studio, Wishaw
1911 Reid, David Murdoch, M.R.C.V.S., 26 Albert Drive, Glasgow
1913 Reid, Hugh, Belmont, Springburn, Glasgow
1905 Reid, Dr John, Greenhill Cottage, Forth, Lanark
1882 Reid, Peter, Haining, 38 Sherbrooke Avenue, Glasgow—*Free Life Member*
1901 Rennie, Joseph, Hillend, Possil, Maryhill
1905 Renwick, Andrew, Buchley Farm, Bishopbriggs
1882 Renwick, Robert, Buchley, Bishopbriggs
1904 Richard, J. M. M., Wiston Lodge, Lamington
1900 Riddell, Matthew, 438 Gallowgate, Glasgow
1905 Robb, Andrew, sen., F.R.C.V.S., 16 Ward Street, Glasgow
1919 Robb, David, Haywoodhead, Haywood, Lanark
1919 Robb, John, Woodend, Carnwath
1905 Robb, William, F.R.C.V.S., 16 Ward Street, Glasgow
1919 Robertson, John, Greenfield, Cobbinshaw
1919 Robertson, Peter, Greenfield, Cobbinshaw
1900 Robley, W. P., 100 High John Street, Glasgow
1898 Russel, William, Longlees, Biggar
1882 Russell, James, Castlehill, Hamilton
1912 Russell, James, Townhead, Holytown
1897 Russell, John, Cleghorn Mill, Lanark
1907 Russell, Robert, Walston Mansion, Dunsyre, Carstairs Junction
1889 Russell, Thomas, 119 Bowman Street, Crosshill, Glasgow
1914 Russell, William, Cleghorn Mills, Lanark
1919 Russell, William, Eastend, Carstairs
1915 Sanderson, William, Hole, Carluke
1914 Scott, Alexander, Bogside, Carluke
1914 Scott, David, Hattonrigg Farm, Bellshill
1894 Scott, John, Kilmuir, Brownside Road W., Cambuslang
1913 Scott, John, Cockridge Farm, Carstairs

Admitted
1914 Scott, John, sen, Boghall, Biggar, Lanark
1885 Scott, John, jun., Auchinloch, Lenzie
1915 Scott, John, jun., Boghall Farm, Biggar
1915 Scott, Robert, Thornholme, Carluke
1919 Scott, Robert Thom, Netherton, Carstairs
1915 Scott, Thomas, Netherhall, Sandilands, Lanark
1919 Scott, Thomas, Netherton, Carstairs
1913 Scott, William, Cockridge Farm, Carstairs
1913 Scott, William, Cowford Farm, Carstairs
1905 Scott, William, Greenhills, East Kilbride
1875 Scott, William, Priestfield, Blantyre
1914 Scott, William, Shodshill, Carnwath, Lanarkshire
1919 Scott, William Wharrie, Hillhead, Thankerton
1919 Semple, Andrew, Burn, Quarter, Hamilton
1919 Semple, John, Threestanes, Strathaven, Lanarkshire
1910 Shand, James B., 20 Renfrew Street, Glasgow
1906 Shanks, Gavin, Silvertonhill House, Hamilton
1907 Shanks, James, Cairnhill, Bearsden, Glasgow
1914 Shanks, John B., "Lisowen," Dumbreck, Glasgow
1915 Shanks, Robert, Glespin, Douglas, Lanarkshire
1915 Shaw, William, Secretary, Upper Ward of Lanarkshire Agricultural Association, Royal Bank, Lanark
1897 Simpson, Alexander M., Whitecross Farm, East Kilbride
1905 Simpson, Kerr A., B.L., of The Hill, Lesmahagow
1915 Sinclair, John, Lamington Mains, Lamington
1914 Sinclair, John, Legholmshiels, Biggar
1897 Sinclair, Robert, Seton Cottage, Bonkle, Newmains
1877 Skead, George, Royal Bank, Wishaw
1907 Sloan, William A. (R. Munro & Co.), 13 Queen Street, Glasgow
1915 Smith, James, Mountainblow, Haywood, Lanark
1919 Somerville, Alexander Wilson, Cleugh, Forth
1914 Somerville, James, Lilybank, Thorntonhall, Glasgow
1911 Somerville, James P., Muirhouse, Carnwath
1915 Somerville, John, Rowhead, Biggar
1897 Somerville, Thomas Purdie, Sandilands, Lanark
1898 Sommerville, John L., 114 Parson St., Glasgow
1909 Soutar, J. C. (Ransomes, Sims, & Jefferies, Ltd.), 37 Berkeley Terrace, Glasgow, W.
1912 Speir, John, Newton Farm, Newton, Glasgow
1883 Stalker, Donald, Mossend Farm, Mossend, Glasgow
1900 Stark, Thomas, Bearyards, Bishopbriggs
1891 Steel, Matthew Taylor, 135 Buchanan Street, Glasgow
1892 Stephen, D. K., 100 Duke Street, Glasgow
1889 Steven, Hugh, *last known address*, Milton Iron Works, Glasgow
1911 Stevenson, James Laing, of Moat, Lesmahagow (3 Belgrave Place, Edinburgh)

Admitted
1904 Stewart, David, Blantyre Park, High Blantyre
1914 Stewart, Hugh, Southfield, Kirkmuirhill
1905 Stewart, John P., Gartcraig, Shettleston
1881 Stewart, Sir R. K., of Murdostoun, Newmains
1915 Stewart, Thomas, Newsteadings, Lanark
1912 Stirling, Alexander, 42 Bain Street, Glasgow
1900 Strang, William, 24 George Square, Glasgow
1915 Struthers, Allan, Thornyhills, Lanark
1915 Struthers, Gavin, Southhalls, Strathaven
1919 Struthers, Gavin C., Bagmoors, Thankerton
1915 Struthers, James, North Cumberhead, Coalburn, Lanarkshire
1905 Struthers, James H., Anston, Dunsyre, Carstairs Junction
1915 Stuart, Alexander, Estates Office, Cartland, Lanark
1893 Symington, Thomas, 63 Hope Street, Glasgow
1914 Taylor, David, Prospect Hill Road, Mount Florida, Glasgow
1906 Telford, Maxwell, Crown Engineering Co., 6/8 Hospital Street, Glasgow
1910 Tennant, Robert, dairyman, Brandon Bridge, Hamilton
1911 Tennant, Thomas, Dyke Farm, Sandilands, Lanark
1919 Thomson, Adam, Langshaw, Carluke
1910 Thomson, E. J., 6 Windsor Terrace West, Kelvinside, Glasgow
1913 Thomson, John, 106 Taylor Street, Glasgow
1878 Thomson, William, 339 Sauchiehall Street, Glasgow
1915 Thorburn, James, Maidencots, Abington
1919 Thorburn, John, Maidencoats, Abington
1915 Todd, Thomas S., Mitchellhill, Biggar
1905 Torrance, Alexander, Crookedstone, Quarter
1910 Trotter, A. M., M.R.C.V.S., Moore Street Abattoir, Glasgow
1896 Turnbull, William, Daldowie, Broomhouse, Glasgow
1914 Turnbull, William W. (The Peat Moss Litter Supply Co.), 19 Waterloo Street, Glasgow
1912 Veitch, William, Drumry, Drumchapel
1882 Vere, J. C. Hope, of Blackwood, Lesmahagow
1905 Waddell, Alexander, 37 Wesleyan Street, Glasgow
1914 Walker, Andrew, Craighead Mill, Lesmahagow
1897 Walker, William Hamilton, Cardarroch House, Airdrie
1907 Wallace, Duncan M., Paton Street, Glasgow
1888 Wallace, John, *last known address*, 273 Argyle Street, Glasgow
1893 Wallace, Robert, Paton Street, Glasgow
1915 Wallace, Robert, Linnhead, Sandilands, Lanark
1897 Wallace, William, Bellsfield House, Pollokshields, Glasgow
1907 Wallace, William B., Paton Street, Glasgow
1913 Warnock, James, Garrion Farm, Garrion, Wishaw
1906 Warnock, Robert, Netherholm Farm, Strathaven
1913 Watson, Archibald, jun., 75 West Nile Street, Glasgow

Admitted
1914 Watson, John, 24 St Vincent Place, Glasgow
1915 Watson, Thomas B., Newton of Wiston, Lamington
1899 Watson, Wm., M.D., 3 Somerset Place, Glasgow
1900 Watt, Thomas, Drumgray, Airdrie
1914 Waugh, John (of Messrs P. & R. Fleming), Graham Square, Glasgow
1905 Weir, Charles, Implement Works, Strathaven
1877 Weir, James, Sandilands, Lanark
1912 Weir, John, Shottsburn, Salsburgh
1915 Weir, John, Townhead, Douglas Water, Lanarkshire
1914 Weir, Robert, Ashfield Farm, Lambhill, Lanarkshire
1915 Weir, William, Farm Manager, Westmains, Carnwath
1915 Weir, William, Hill of Orchard, Carluke
1884 Weir, William C., c/o Weir & Robertson, 7 Royal Bank Place, Glasgow
1913 Whigham, Robert B., Aftonlea, Shettleston
1914 White, Matthew, jun., Scotstoun Flour Mills, 45 Hope Street, Glasgow
1914 Williamson, John, Clark Terrace, Cochrane Street, Bellshill
1905 Williamson, William, Belziehill, Bellshill
1919 Wilson, Allan, East Glespin, Douglas
1910 Wilson, Andrew, Ladyacre Road, Lanark
1914 Wilson, Francis, Lambhill, Strathaven
1888 Wilson, James, Westburn, Cambuslang
1919 Wilson, John, Yett, Libberton, Carnwath
1919 Wilson, John W., Mansefield, Thankerton
1914 Wilson, Peter, M.R.C.V.S., Lanark
1919 Wilson, Robert, East Glespin, Douglas
1919 Wilson, Robert H. B., South Cobbinshaw, Cobbinshaw
1906 Wilson, Thomas M., Nether Abington, Abington
1913 Wilson, William, Estates Office, Castlemains, Douglas, Lanark
1915 Wilson, William, Townhead, Libberton, Carnwath
1908 Wilson, William, Water Meetings, Abington
1907 Wingate, David, Castlehill Farm, Wishaw
1889 Wood, Alexander, Woodlands, Partick
1914 Wordie, Major William, Montgomerie Drive, Kelvinside, Glasgow
1913 Wright, William, Craigmill, Strathaven
1915 Young, Andrew, Birkhill, Lesmahagow
1897 Young, James, Bulomock House, Springburn, Glasgow
1905 Young, James, Greenfield, Strathaven
1914 Young, James, Rylandside, Strathaven
1914 Young, James Johnston, Lochburnie Farm, Maryhill, Lanarkshire
1914 Young, John Duncan, 28 Royal Exchange Square, Glasgow
1918 Young, Robert John, Lochburnie, Maryhill
1911 Young, William, St Leonard's Street, Lanark
1912 Young, William (Alex. Cross & Sons, Ltd.), 19 Hope Street, Glasgow

RENFREW.

1913 Adam, James, Abbotsinch, Renfrew
1906 Adam, John, East Walkinshaw, Renfrew
1913 Adam, John, jun. East Walkinshaw, Renfrew

Admitted
1913 Adam, Robert, East Walkinshaw, Renfrew
1882 Aikman, Thomson, Erskine House Bishopton (1 East India Avenue, London, E.C.)
1913 Aitkenhead, Robert, Larkfield, Gourock
1905 Alexander, William, Dripps Mill Farm, Busby
1912 Allan, Bryce, The Cliff, Wemyss Bay
1884 Allan, David, M.R.C.V.S., Clarkston, Busby
1912 Andrew, James, V.S., 26 St James Street, Paisley
1912 Andrews, John, Cardonald Mills, Paisley
1895 Ballantyne, William, Busbyside, Busby
1912 Barclay, George, Thornhill, Johnstone
1914 Barrowman, Richard, Rankine Street, Johnstone
1913 Biggart, John William, Rosardene, Kilmalcolm
1913 Black, Donald, Devol, Port-Glasgow
1897 Blackwood, Walter, Van Ryn, Kilmailing Road, Cathcart
1913 Blair, Archibald, 7 Finnart Terrace, Greenock
1910 Blanche, David, Heathfield, Greenock
1905 Bowie, Walter, Marymaur, Paisley
1905 Brown, William, Craigton, Bishopton
1884 Bryce, David, Inches, Paisley
1919 Bryson, Alexander W., Land Steward, Arthurlie Street, Barrhead, Renfrew
1906 Buchanan, George, Hunterhill Farm, Paisley
1912 Burns, James, Drygate, Kilbarchan
1912 Caldwell, James, Braes, Kilbarchan
1912 Caldwell, William, Ward, Kilbarchan
1915 Carruth, Allan, High Auchensale, Kilbarchan
1913 Chalmers, David W., 29 Newton Street, Greenock
1913 Chapman, Robert, North Arkleston, Paisley
1905 Clark, David, High Craig, Eaglesham
1905 Clark, James, High Craig, Eaglesham
1906 Clark, James, Netherlea, Ormonde Mount, Cathcart
1913 Clark, John, Dunrod, Inverkip
1884 Clark, William, Netherlea Farm, Ormonde Mount, Cathcart
1910 Clement, Sir Thomas, Netherton, Mearns, Renfrewshire
1912 Coats, Daniel, 5 Garthland Place, Paisley
1913 Coats, P. H., Corsebar, Paisley
1888† Coats, Sir Thos. Glen, Bart., C.B., of Ferguslie Park, Paisley
1897 Collins, Major Hugh Brown, of Auchinbothie, Kilmalcolm
1913 Cook, John W., 48 South Street, Greenock
1913 Craig, James, Hollows Farm, Paisley
1913 Craig, John, Mill o' Cart, Linwood
1913 Craig, Peter, 30 Ferguslie, Paisley
1913 Craig, Thomas, Morrislea, Greenock Road, Paisley
1912 Craw, James Snodgrass, Saucel, Paisley
1912 Crawford, James, Botherwickfield Farm, Bridge of Weir
1884 Crawford, John W., Denniston, Greenock
1913 Crawford, Robert, Burnside Farm, Langbank
1881 Cross, David, Ingliston, Bishopton
1897 Cross, Thomas, Langbank, Renfrewshire
1914 Cumming, William, 22 Well Street, Paisley
1913 Cunninghame, James, St James Street, Paisley
1913 Darroch, Colonel Duncan, Gourock House, Gourock
1894 Dawson, Robert, Dovehill, Pollokshaws

Admitted
1913 Fairweather, Wallace, Faside and Mearns Castle, Newton Mearns
1906 Farquhar, Mrs Hilda Harrington, St Margaret's, Bridge of Weir
1914 Fergus, A. M. Houston, The Quinta, Bridge of Weir
1900 Fleming, Andrew, Threepland, Eaglesham
1883 Fleming, William, of Park, Renfrew
1912 Forrest, William, Chain Road, Paisley
1872 Forsyth, James, Ironmonger, Kilmalcolm
1897 Fulton, Thomas, Shiels, Renfrew
1912 Galloway, George, Estate Factor, Bishopton
1912 Gardner, James, South Hillington, Cardonald, Glasgow
1912 Gardner, John, Woodend, Houston
1905 Gemmell, Alexander, Humbie, Newton Mearns
1912 George, William, Rossland, Bishopton
1912 Gibb, John, Gladstone, Bishopton
1912 Gilmour, Matthew, Town of Inchinnan, Inchinnan
1913 Glen-Coats, Major A. Harold, Ferguslie Park, Paisley
1913 Goff, William Henry, Dargavel, Bishopton
1917 Hamilton, Thomas W., F.S.I., Estate Architect and Surveyor, Mansion House, Greenock
1900 Harvie, Alexander, Shieldhill, Newton Mearns
1905 Harvie, Robert, Darnley Mill, Nitshill
1900 Hattrick, J. M., Glen Park, Johnstone —*Free Life Member*
1912 Henderson, William, Old Crookston, Nitshill
1914 Hill, William A., Greenock Grain Mills, Greenock
1913 Hislop, John, Bannerbank, Newton Mearns
1913 Holmes, Robert, Donaldfield, Bridge of Weir
1906 Holmes, William, Netherhouses, Lochwinnoch
1905 Holms, John A., Formakin, Bishopton
1905 Holms, William, jun., Gladstone, Kilbarchan
1897 Houston, Alexander C., Marylea, Calside, Paisley
1906 Houston, Gavin, Greenhill, Elderslie, Johnstone
1912 Houston, John, Langside Farm, Port-Glasgow
1894 Houston, William F., V.S., Paisley
1913 Howie, Robert, Flatterton, Greenock
1912 Howie, William, 5 Robertson Street, Greenock
1894 Hunter, Andrew, St Brydes, Howwood
1913 Inverclyde, Lord, Castle Wemyss, Wemyss Bay
1897 Jackson, John, Whitemoss, Bishopton
1912 Kerr, John, Duchal Mains, Kilmalcolm
1912 Kerr, William, Neilstonside, Neilston
1913 Kinloch, John, Branchal, Bridge of Weir
1906 Kyle, Matthew, Barnhill, Inchinnan
1912 Kyle, Robert, South Candren, Paisley
1906 Laidler, James, Eastview, Glasgow Road, Paisley
1912 Laird, John, Ladymuir, Kilbarchan
1906 Lambie, George W., Pilmuir Farm, Newton Mearns
1895 Lambie, James, Bonnyton Moor, Eaglesham
1905 Lambie, John, Langton, Newton Mearns
1897 Lang, Alexander A., Garneyland, Inchinnan, Renfrew

Admitted
1913 Lang, John, Chrisswell, Greenock
1912 Lang, William, 4 Glen Lane, Paisley
1912 Lawrie, Robert, 77 New Sneddon Street, Paisley
1908 Linton, Walter, Craig Rannoch, Camperdown Road, Scotstoun
1913 Livingstone, Andrew, 20 Gauze Street, Paisley
1912 Lobnitz, Fred., Ross Hall, Crookston
1882 Locke, Matthew, Nether Kirkton, Neilston
1913 Love, James, Kibble Institution, Paisley
1913 Lyle, James, Ditch Farm, Bishopton
1912 Lyle, Robert, West Porton Farm, Bishopton
1912 M'Aulay, Peter, Bow, Greenock
1913 M'Aulay, Robert, Craigs Farm, Greenock
1905 M'Coll, Neil, Craigends Home Farm, Johnstone
1875 Macdowall, H., of Garthland, Lochwinnoch
1905 M'Gee, Walter, Bridge Street Grain Mills, Paisley
1913 M'Gregor, J. Gillray, M.R.C.V.S., West Blackhall Street, Greenock
1912 M'Indoe, James, 17 Queen Street, Paisley
1912 Macintosh, Alexander, Greenhill, Houston
1913 M'Intyre, Alexander, Leitchland Farm, Greenock
1913 M'Intyre, William, Langhill Farm, Inverkip
1897 M'Kay, John, Crossmill, Barrhead
1914 M'Kean, James Anderson Dunlop, Rozelle, Paisley
1910 M'Kie, William Taylor, Freeland, Bishopton
1884 M'Kie, H. B., Freeland, Bishopton
1906 M'Lachlan, John, Glenburn, Gourock
1912 Maclennan, H. A., Ardgryffe, Johnstone
1896 M'Meeken, James, *last known address*, Auldhouse, Pollokshaws
1905 M'Millan, William, Orchard, Giffnock
1913 M'Nair, John, Meikleriggs, Paisley
1905 M'Neilage, Robert, Arden, Thornliebank
1912 Marshall, James, Mavisbank Cottage, Paisley
1895 Marshall, Robert C., Bruntshields, Kilbarchan
1914 Marshall, William, 12 St James Avenue, Paisley
1913 Mathie, James, Cove Farm, Gourock
1913 Mathie, James, Merksworth, Paisley
1910 Maxwell, Miss Mary Alexandra, Daldowie, Broomhouse, Glasgow
1889† Maxwell, Sir John Maxwell Stirling, of Pollok, Bart., Pollokshaws
1912 Meiklejohn, A. M., Rosehill, Nitshill
1905 Michie, David K., Elderslie Estates Office, Renfrew
1912 Middlemas, Robert C., Auchenames, Milliken Park
1905 Millar, James, Flanders, Newton Mearns
1913 Mitchell, Kenneth, Caledonia Street, Paisley
1917 Muirhead, Roland E., Meikle Cloak, Lochwinnoch
1904 Munro, John M., Mount View, Giffnock
1905 Munro, Robert, Polnoon, Eaglesham
1890 Murray, J. Campbell, Hagg's Castle, Pollokshields, Glasgow
1912 Murray, R., jun., Pacemuir Mill, Kilmalcolm
1906 Paterson, William, Nether Enoch, Eaglesham
1913 Paton, George, Haining Farm, Renfrew

Admitted
1882 Pollock, John, *last known address*, Pollokshaws
1873 Pollock, John, Byres Farm, Pollokshaws
1883 Pottie, Alexander, M.R.C.V.S., Paisley
1913 Pottie, Alex., jun., V.S., Love Street, Paisley
1913 Pottie, J. Donaldson, M.R.C.V.S., 25 Tobago Street, Greenock
1912 Ramsay, William R., Seedhill Mills, Paisley
1912 Rankin, James, Netherton, Renfrew
1882 Reid, Robert, Writer, Houstoun Square, Johnstone
1888 Reid, William, Wester Kittochside, Busby
1905 Renfrew, Andrew, Barrance, Newton Mearns
1900 Renfrew, William, Ferguslie Farm, Paisley
1912 Rennie, John, 26 Neilston Road, Paisley
1912 Renshaw, Sir Stephen Bine, Bart, of Foxbar, Paisley
1912 Riddell, Robert, Blackhall, Paisley
1913 Ritchie, James A., Locherside, Houston
1913 Ritchie, William, Broomward, Elderslie
1856 Robertson, John, 22 Forsyth Street, Greenock
1912 Rowand, John, Candren, Paisley
1889 Russell, Thomas, *last known address*, Kelly Farm, Wemyss Bay
1912 Samson, James, Drumcross, Bishopton
1912 Samson, John, Drumcross Farm, Bishopton
1912 Scott, Alexander, North Mains, Johnstone
1913 Scott, James, Green Farm, Kilmalcolm
1913 Scott, John, Hill Farm, Inverkip
1913 Service, John, Tontine Hotel, Greenock
1912 Sharp, John, Clippens, Johnstone
1879 Shaw-Stewart, Sir Hugh, of Greenock and Blackhall, Bart., C.B., Ardgowan, Greenock
1912 Snodgrass, Matthew, Old Mains, Inchinnan
1891 Speirs, Alex. Archibald Hagart, of Elderslie, Houston House, Houston
1914 Speirs, Peter, Barochan Cross, Houston
1905 Steven, Robert, Priesthill Farm, Nitshill
1905 Steven, Thomas, Wardhill, Nitshill
1912 Stevenson, James, Wardend, Milliken Park
1913 Stevenson, Matthew, jun., Linburn, Inchinnan
1908 Stewart, James, Carrot, Eaglesham
1912 Stirrat, Robert, Blackstoun Home Farm, Paisley
1905 Strang, George, Leggatston, Nitshill
1905 Strang, William, Upper Darnley, Barrhead
1912 Taylor, Thomas, Moss-side, Paisley
1913 Telfer, John, Branchal, Bridge of Weir
1894 Thomson, Malcolm B., *last known address*, Crosslee House, Houston, Johnstone
1912 Turner, William, Loanhead, Houston
1913 Walker, James, Brounsfield, Renfrew
1913 Walker, Robert Steuart, The Hill, Greenock
1913 Waters, Archibald F. C., Westmarch House, Paisley
1900 Watson, Alexander, Greenfield, Eaglesham
1912 Whyte, Hugh, Nether Craigends, Johnstone
1906 Whyte, John, Nether Craigends, Johnstone

Admitted
1894 Wilkinson, John, Mansion House, Greenock
1912 Williamson, James, Skiff Cottage, Howwood
1912 Williamson, Robert, Penwold, Bridge of Weir
1912 Wilson, Alexander, Thornly Park, Paisley
1894 Wilson, James, Boghall, Houston
1913 Wilson, James, Capellie, Neilston
1912 Wilson, James, Manswraes, Bridge of Weir
1883 Wilson, John, *last known address*, Erskine, Bishopton
1910 Wilson, Robert, Craig of Neilston, Neilston

Admitted
1897 Wilson, Robert, West Hurlett, Barrhead
1912 Wilson, Thomas, Jaapston, Neilston
1913 Wylie, James, 2 Russell Street, Paisley
1913 Young, A. R., 41 Gordon Street, Paisley
1912 Young, James L., 41 Gordon Street, Paisley
1883 Young, R. C., of Shoddesden, Netherfield, Georgetown
1913 Young, Robert, 41 Gordon Street, Paisley
1913 Young, William, 41 Gordon Street, Paisley
1905 Young, William, Haugh Farm, Nitshill
1912 Young, William N., Fulwood Mains, Houston

Number of Members, 1238.

2.—PERTH DIVISION.

EMBRACING THE

COUNTIES OF FIFE, FORFAR (WESTERN DISTRICT), KINROSS, AND PERTH (PERTH SHOW DIVISION).

FIFE.

Admitted
1919 Adam, David, Middle Grange, East Grange, Dunfermline
1900 Adamson, David, Bruckley, Dairsie
1911 Aird, John, Balbeardie Farm, Kirkcaldy
1909 Aird, William, Stenhouse Farm, Burntisland
1883 Aitken, George Lewis, Boglily, Kirkcaldy
1911 Allan, James, Donibristle Home Farm, Aberdour
1883 Anderson, David A., 80 Crossgate, Cupar-Fife
1905 Anderson, J. L., Town Clerk, Cupar-Fife
1904 Anderson, John, Newbigging of Ceres, Cupar-Fife
1911 Anderson, Robert G., F.R.C.V.S., Cupar-Fife
1911 Anderson, W., M.R.C.V.S., Pittenweem
1892† Anstruther, Sir R., of Balcaskie, Bart., Pittenweem
1915 Anstruther, Lieut. Robert Edward, The Black Watch, Balcaskie, Pittenweem
1885 Anstruther-Duncan, Mrs C. H. A., of Naughton, Dundee
1904 Anstruther-Gray, Lieut.-Colonel William, of Kimany, Cupar-Fife
1911 Armit, John, Newtonhall, Kennoway
1900 Arnot, Patrick, Moonzie, Cupar-Fife
1886 Arnot, Thomas, Newton of Lathrisk, Freuchie
1894 Auchmuty, George, Craighead, Crail
1884 Auchterlonie, James, Leckerstone, Dunfermline
1884 Balfour, Edward, of Balbirnie, Markinch
1912 Ballingal, Robert, Balgonie Estate Office, Markinch
1903 Ballingall, George, Newton, Wormit
1890 Banks, James, Pitteddie, Kirkcaldy
1886 Baxter, Edward Gorrel, of Teasses, Largo
1900 Beath, Thomas, Balquhomrie, Leslie
1912 Bell, Alexander M., of Fairfield, Colinsburgh
1893 Bell, George, Lundin Mill, Largo
1880 Bell, John, Balboothie, Kilconquhar
1903 Bell, John C., Randerston, Kingsbarns
1912 Bell, John W., jun., Balboothie, Kilconquhar
1893 Bell, P. A., Pusk, Leuchars
1897 Bell, Robert, Upper Kenley, Boarhills, St Andrews
1877 Bennet, Arthur, Scotland Wells, Leslie
1896 Berry, William, of Tayfield, Newport, Fife
1916 Berwick, Andrew, of Hayston, Leuchars
1912 Berwick, Andrew, Wormistone, Crail

Admitted
1912 Berwick, David, Milton of Blebo, Cupar-Fife
1904 Berwick, John, Barbarafield, Cupar-Fife
1898 Berwick, P. W., Ardross, Elie
1912 Berwick, William, Balcormo, Largo
1912 Berwick, William, Balgarvie, Cupar
1909 Bethune, Major H. A., of Mountquhanie, Cupar-Fife
1906 Beveridge, Henry E., Pitbauchlie, Dunfermline
1912 Black, David, Tullybreck, Thornton
1911 Black, William, Charlestown Lime Works, Dunfermline
1900 Blair, David, Littleinch, Wormit
1889 Blyth, James, Logie, Newburgh
1911 Bonthrone, David, Newton of Falkland, Falkland, Fife
1895 Bonthrone, James, Pitcairn, Cardenden
1911 Bonthrone, William, Forthar Mill, Freuchie
1899 Bowman, David W., Balcormo, Pittenweem
1915 Breen, William W., 9 Murray Place, St Andrews
1902 Brown, Alexander, Airdrie, Anstruther
1911 Brown, Andrew, Kincraig, Elie
1894 Brown, Hugh, Colton Mains, Dunfermline
1911 Brown, John, Glentarkie, Strathmiglo
1897 Burns, A., Grange, Dunfermline
1911 Burns, Peter D., Gellet, Dunfermline
1906 Buttercase, David L., Uthrogle, Cupar-Fife
1906 Butters, James, Masterton, Dunfermline
1912 Cairns, Charles, Holmsdale, Cupar-Fife
1901 Cairns, James, Abercrombie, St Monance, Fife
1904 Cairns, James, Rennyhill, Anstruther
1904 Cairns, William Roger, Cambo Farm, Kingsbarns
1911 Calder, John W., Corston Mill, Gateside
1912 Cameron, Dr, Hillside, Ceres, Cupar
1905 Cameron, James, Tayside, Newburgh, Fife
1902 Campbell, John T., Starr Farm, Cupar-Fife
1905 Carstairs, John, Carnbee, Pittenweem
1869 Carswell, David, Blacketyside, Leven
1885 Carswell, J. H., Rostellan, Cupar-Fife
1886 Cathcart, James T., of Pitcairlie, Newburgh
1889 Cheape, Mrs, of Wellfield, Strathmiglo
1901 Cheape, Captain G. R. H., Wellfield, Gateside, Fife
1881 Cheape, J., of Lathockar, Strathtyrum, St Andrews
1879 Christie, F. W., Edenview, Cupar-Fife
1890 Christie, James M., of Morton, Tayport

Admitted
1889 Clark, Alexander, Chestnuts, Lundin Links
1905 Clark, Alexander, Newton, Markinch
1907 Clark, William, Local Factor, Raith Estate Office, Kirkcaldy
1900 Clark, William, Wester Bogie, Kirkcaldy
1905 Clement, D. W., East Pitkierie, Anstruther
1894 Clement, Jas., Balkaithly, St Andrews
1894 Clement, John, North Dron, Dairsie, R.S.O.
1882 COCHRANE, Hon. Thomas, Crawford Priory, Springfield
1912 Cook, David, Clydesdale Bank House, Anstruther
1913 Coventry, William, Overton Farm, Kirkcaldy
1905 Craig, William, Couston, Aberdour, Fife
1905 Cranna, Charles J., Orwell, Ladybank
1912 CRAWFORD, The Earl of, Balcarres, Fife
1894 Crichton, James, Boyne House, Ladybank
1911 Crichton, James B., of Luthriebank, Cupar-Fife
1908 Cunningham, W. G., Dalachy, Aberdour, Fife
1911 Currie, Miss Evelyn Thomson, Trynlaw, Cupar-Fife
1906 Dalziel, Sir T. Kennedy, Nether Kenneddar, Saline, Fife
1901 Dand, John R., Frankfield, Kirkcaldy
1899 Davidson, Peter, East Craigfoodie, Dairsie, R.S.O.
1896 Davidson, Thos., Branxton and Cowdenlaws, Dysart
1912 Davie, James, North Glassmont, Kirkcaldy
1912 Dickie, Alexander N., Caiplie, Crail
1911 Dickie, Alexander S., Grahamstone, Leslie
1894 Dickie, Alfred, Devon, Kennoway
1907 Dickie, Henry, Seafield, Inverkeithing
1912 Dickie, James N., Devon, Kennoway
1911 Dickie, John, Kettle Farm, Kingskettle
1899 Dingwall, Andrew, Hally Bank, Lundin Links
1911 Donaldson, George, Road Surveyor, Craigvors, Kirkcaldy
1911 Donaldson, George, The Elms, Leven, Fifeshire
1894 Dott, Robt., *last known address*, Muir Farm, Pathhead, Kirkcaldy
1914 Dougall, John, Lassodiemill Farm, Dunfermline
1879 Dow, David, of Rossie, Auchtermuchty
1898 Dow, James F., Muirton, Kirkcaldy
1907 Drybrough, D., Freuchie Mill, Freuchie
1884 Dun, George, Bay View, Upper Largo
1883 Duncan, John, of Kirkmay, Crail
1871 Duncan, John, Easter Balrymonth, St Andrews
1912 Dykes, William H., Falkland Home Farm, Falkland
1911 Easson, Adam, Merryhill, Charlestown
1909 Easson, Joseph, West Pitcorthie, Dunfermline
1897 Edie, Harry Hay, Cornceres, Anstruther
1881 Elder, Hugh, Dunfermline
1911 ELGIN and KINCARDINE, K.G., The Earl of, Broomhall, Dunfermline
1911 Erskine, T. H., Grangemuir, Pittenweem
1908 Fair, Alexander, Annfield, Crossgates, Dunfermline
1892 Fair, Alexander, Pratis Farm, Leven
1898 Fair, David, Duniface, Windygates
1906 Fair, George, Camilla, Auchtertool, Kirkcaldy
1891 Fairlie, J. O. R., of Myres Castle, Auchtermuchty

Admitted
1882 FERGUSON, Sir R. C. Munro, of Raith, Kirkcaldy
1900 Ferguson, William Crawford, Foxton, Cupar
1912 Ferlie, Thomas, J.P., Auchtermuchty
1875 Fernie, James A., Albert Cottage, Burntisland
1891 Ferrie, David, of Parbroath, Cupar-Fife
1892 Finlay, Archibald, Mairsland, Auchtermuchty
1903 Fleming, Alexander, Boarhills, Fife
1893 Fleming, Andrew, Bankhead, Leven
1905 Fleming, William, Grangemuir, Pittenweem
1910 Fletcher, Duncan, jun., Cameron Street, Dunfermline
1911 Foord, James, Netherton of Bucklyvie, Crossgates
1873 Forgan, James, Sunnybraes, Largo
1911 Forrester, James, Whinnyhall, Kinglassie
1903 Forrester, William Andrew, Elie
1894 Fraser, Robert, Middle Balbeggie, Kirkcaldy
1904 Fulton, Adam, Netherton, Kelty
1911 Fulton, James, Midfield, Dunfermline
1912 Fulton, John, Balmule, Burntisland
1905 Gavin, George, Estate Office, Falkland Palace, Falkland
1871 Gibb, David, Barnsmuir, Crail
1909 Gibb, James, Lochtyside, Thornton
1898 Gibb, William G., Pitteuchar, Thornton
1908 Gibson, John, Lochend, Leslie
1907 Gifford, John, Bonerbo, Anstruther
1896 Gilchrist, William, Nursery Cottage, Mount Melville, St Andrews
1897 Gilmour, Harry, Montrave, Leven, Fife
1872†GILMOUR, Sir John, of Montrave, Bart., Leven
1897 Gilmour, Colonel John, yr. of Montrave, M.P., D.S.O., Montrave, Leven
1890 Gilroy, George A., Clatto, Cupar-Fife
1887 Goodall, Thomas, Cardenbarns, Cardenden
1911 Goodall, William, Balgreggie, Cardenden
1896 Gordon, Rev. Æneas G., The Manse Kettle
1908 Grassick, W. H., Rankeilour Mains, Springfield
1910 Gray, Thomas, Parkhouse Dairy, Crossgates
1912 Gray, William, Balantager Farm, Collessie
1911 Grey, Fred, Springfield Farm, Springfield, R.S.O.
1911 Grosart, John A., Ardenvahr, Halbeath Road, Dunfermline
1911 Grosset, Alfred E., Solicitor, Cupar-Fife
1896 Grosset, J. E., Solicitor, Cupar-Fife
1912 Haggart, Douglas C., Balsillie Farm, Leslie
1907 Haggart, James, jun., Balsillie, Leslie
1911 Hamilton, John, jun., Goatmilk, Leslie
1908 Hamilton, William, Muirhead, Dairsie
1912 Hardie, George, Lochgelly Mains, Lochgelly
1915 Hardie, William, Gallowridgehill, Dunfermline
1912 Heggie, William, Priorybank, Dunfermline
1891 Henderson, A. L., Kingsdale, Kennoway
1911 Henderson, James, Meadowwells, Collessie, Fife
1913 Henderson, John, 121 Main Street, Lochgelly
1911 Henderson, Robert, Strathmiglo
1912 Henderson, Robert, 86 Main Street, Lochgelly

Admitted
1913 Henderson, William, Reedieleys, Auchtermuchty
1895 Hewitt, Hon. William James, St Colmes House, Aberdour, Fife
1904 Hill, John, Langside, Kennoway
1901 Hill, Thomas, jun., Boarhills, St Andrews
1900 Hill, William, East Baldridge, Dunfermline
1911 Hogarth, John, Flour Mills, Kirkcaldy
1905 Holmes, John, Coal, St Monance
1909 Home-Rigg, Patrick J., Tarvit, Cupar-Fife
1887 Howie, Archibald, Grange Farm, Kinghorn
1909 Howie, John, Newark Farm, St Monance
1891 Husband, Robert, Solicitor, Dunfermline
1891 Hutton, John, Gibliston, Colinsburgh
1900 Inglis, James, Barnslee, Markinch
1891 Inglis, James, Redhouse, Cardenden, R.S.O.
1887 Inglis, John, of Colluthie, Cupar-Fife
1909 Ireland, H. B., Ballindean, Kilmany
1895 Irving, John, Fernlea, Cupar-Fife
1912 Jack, Peter Christie, Logie, Cupar-Fife
1896 Jamieson, W., Estate Office, Elie
1893 Jeffrey, Robert, Drumfin, Torryburn
1902 Johnston, Andrew, Navitie House, Glencraig
1882 Johnston, S. W., St Michael's, Cupar-Fife
1884 Kay, Andrew, Hillside, Newburgh, Fife
1911 Kay, James, Fliskmillan, Newburgh
1881 Kay, Robert, Fliskmillan, Newburgh, Fife
1909 Kennedy, Alexander, Blackhall, Dunfermline
1919 Kennedy, James, Contractor, 74 Holyrood Place, Dunfermline
1912 Key, Thomas, Brewer, Crail
1893 Kidd, John, West Downie Mount, Tayport, Fife
1912 Kininmonth, John B., Wester Colquhally, Lochgelly
1912 Kinnaird, William, Carberry Farm, Kirkcaldy
1884 Kinnear, John Boyd, of Kinloch, Collessie
1879 Knight, Robert, V.S., Abbots House, Maygate, Dunfermline
1896 Laidlay, A. H., Strathaven, St Andrews
1900 Laird, John, Caskieberran, Leslie
1911 Lamont, James M., Bullions, Dunfermline
1878 Landale, James, The Binn, Burntisland
1909 Lang, Robert, Bankhead, Dunfermline
1896 Law, James, Spencerfield, Inverkeithing
1891 Lawson, Alexander, of Burnturk, Annfield, Kettle
1903 Lawson, John, of Carriston, Markinch
1912 Lawson, William H., Firthfield, Anstruther
1884 Lees, David, of Pitscottie, Cupar
1912 Lees, George, Baldastard, Largo
1912 Lees, John, Royal Hotel, St Andrews
1897 Leitch, Richard G., Cameron, Windygates
1896 Lesslie, William Smith, Banchory, Kirkcaldy
1907 Letham, John, Balgrummo, Leven
1911 Lochead, Joseph, Upper Stenton, Thornton
1889 Lochead, Matthew, Neworth Crescent Road, Lundin Links
1904 Low, William, of Blebo, Cupar-Fife

Admitted
1911 Lumsden, George James, Tarvit House, Cupar-Fife
1895 Lumsden, John Lowson, Eden Valley House, Freuchie
1904 Lyle, Alexander, Auchmuty Farm, Markinch
1914 Lyon, Edmond, Newton, East Wemyss
1899 Macdonald, A., Blacklaw, Dunfermline
1901 M'Farlane, James, Torr of Moonzie, Cupar-Fife
1901 M'Garva, Gilbert R., Estates Office, Colinsburgh
1890 M'Gregor, James F., 73 Market Street, St Andrews
1912 M'Innes, James, jun., Westgate, Markinch
1878 M'Intosh, Dr, 2 Abbotsford Crescent, St Andrews (and Nevay Park, Forfarshire)
1910 Mackenzie, Alexander, M.R.C.V.S., 115 South Street, Kirkcaldy
1869 M'Kinlay, John, Bank Street, Kincardine-on-Forth
1911 M'Laren, David, 16 Millhill Street, Dunfermline
1909 M'Laren, W. F., 41 East Port, Dunfermline
1903 Maclellan, Walter R., of Kinsleith, Cupar-Fife
1883 MacNab, John, Kinglassie House, Kinglassie
1913 Macniven, William, Royal Bank, Kirkcaldy
1912 M'Pherson, Donald, Fosterton, Thornton
1915 M'Vean, Duncan, Easter Cartmore, Lochgelly
1905 Marshall, Harley, of Dunduff, Dunfermline
1879 Marshall, Walter, of Lochmaloney, Cupar
1908 Martin, James, Johnstone Farm, Newburgh-on-Tay
1913 Martin, John, Church Street, St Andrews
1910 Mathewson, William, Middlebank, Dunfermline
1912 Mechie, John, Miller, Auchtermuchty
1879 Meikle, William, Kellock Lane, Strathkinness, St Andrews
1893 Meiklem, William, Begg, Kirkcaldy
1905 Meldrum, Charles Bayne, of Balmungo, St Andrews
1859 Meldrum, John, Brooksby, St Andrews
1897 Millar, George, Nydie Mains, St Andrews
1877 Millar, J., of Waulkmill, Dunfermline
1911 Miller, James, Kirkcaldy
1904 Miller, James W., Lochhead, West Wemyss
1870 Millie, George, St Mary's, Cupar-Fife
1893 Milne, John, *last known address*, Annfield, Cardenden
1912 Milne, Thomas, Gowrie Cottage, Freuchie
1894 Mitchell, Alexander, of Luscar, Dunfermline
1905 Mitchell, H. Q., Newbigging, Burntisland
1898 Mitchell, John, *last known address*, Clentrie, Kirkcaldy
1904 Mitchell, Robert T., of Newington, Cupar-Fife
1899 Mitchell, Stuart, *last known address*, Newbigging, Burntisland
1907 Mitchell, William, Calais, Dunfermline
1912 Morgan, George B., Nisbetfield, Ladybank
1905 Morgan, John, Kilgour, Falkland, Fife
1906 Morris, Andrew Ireland, West Pitkierie Farm, Anstruther

Admitted
1878 Morrison, B. G. W., of Falfield, Cupar-Fife
1902 Morrison, E. E., Balmonth, Pittenweem
1890 Morton, David, Crail
1915 Morton, James, Ansonhill House, Crossgates
1894 Morton, John G., *last known address*, Wormiston, Crail
1912 Moubray, Major E. C., The Pleasants, Aberdour
1894 Moubray, Major W. H. H. Carew, of Otterston, Aberdour
1912 Muirhead, Andrew, Demperston, Auchtermuchty
1903 Mungall, William, of Transy, Dunfermline
1903 Murray, James, Balmerino, Wormit
1902 Murray, James, Jesmond House, Largo, Fife
1919 Nairn, Emily Frances Lady, Rankeilour Mains, Springfield, Fife
1911 Nairn, R. Spencer, Barham, Springfield
1896 Nicholson, W. D., Hopedene, Elie
1906 Nicol, J. M. R., Greenside, Leven
1919 Nicoll, George, Rosebank, Gateside, Fife
1884 Nisbet, T. M., Forthar, Freuchie
1905 Niven, Alexander, of Collairnie, Ladybank
1913 Orchison, C. M., Denbrae, Cupar-Fife
1882 Osborne, David, Banker, Cupar-Fife
1913 Osborne, Thomas, Beverkae Farm, Donibristle
1911 Oswald, Colonel St C., of Dunnikier, Kirkcaldy
1911 Pagan, R. Osborne, Weston, Cupar-Fife
1912 Park, Matthew, Chapel, Kirkcaldy
1912 Park, Robert, Butcher, Kirkcaldy
1913 Paterson, Thomas, Kinnaird, Dairsie
1911 Peat, James, Edenwood, Cupar-Fife
1912 Penrice, George, Pitcruvie, Largo
1913 Pilkington, Reginald M., St Fort, Newport
1893 Porter, James, Prinlaws House, Leslie
1889 Purvis, Brig.-General Alexander, R.A., of Kinaldy, Stravithie, Fife
1905 Purvis, Major R. W., of Gilmerton, St Andrews
1895 Ramsay, John, Inch, Pittenweem
1886 Reid, Andrew, V.S., Auchtermuchty
1910 Reid, David, Wester Finglassie, Leslie
1911 Reid, Robert, Craigart, Ladybank
1911 Reid, Robert, M.R.C.V.S., Millgate, Cupar-Fife
1912 Reid, Thomas William, West Hall, Cupar
1919 Rintoul, William, Kilmux, Leven
1893 Rintoul, William, Mains of Blebo, Cupar
1904 Ritchie, James M., Denhead, Ceres, Fife
1900 Ritchie, William, Orchard House, Auchtermuchty
1900 Robertson, James, Largo
1911 Robertson, John, Walton, Auchtertool
1916 Robertson, John (R. Steele & Brodie), Wormit Works, Wormit
1911 Robertson, William, Royal Hotel, Cupar-Fife
1907 Rodger, Andrew, Kellie Castle Farm, Pittenweem
1910 Rodger, George S., Clunie Mains, Kirkcaldy
1899 Roger, John M., Balgove, St Andrews
1900 Rollo, D. M., Solicitor, Cupar-Fife
1900 Rollo, W., Easter Forret, Cupar-Fife
1891 Ross, Nicol, Navitie House, Glencraig, Fife
1905 Rothes, Earl of, Leslie House, Leslie

Admitted
1904 Russell, David, of Inchdairnie, Leslie (2 St Andrew Square, Edinburgh)
1895 Russell, George, Hatton, Lundin Links
1911 Scobie, George R., Methilhill Farm, Windygates
1893 Scott, Douglas, Newton of Wemyss, Fifeshire
1907 Shanks, Alexander, Falkland Wood Farm, Falkland
1905 Sharp, Mrs F. B., Hill of Tarvit, Cupar-Fife
1904 Sharp, James, 1 Park Street, St Andrews
1909 Shaw, John, Treaton Farm, Markinch
1908 Shepherd, J. Ogilvy, Royal Bank Buildings, Leven
1904 Shiell, James Guthrie, Cairney, Cupar-Fife
1899 Sidey, James, *last known address*, Blinkbonny, Newburgh
1908 Sime, John Thomson, Bankhead of Inchdairnie, Leslie
1900 Sime, William Webster, Royal Hotel Ladybank
1912 Sinclair, Thomas, Leuchatsbeath, Cowdenbeath
1904 Small, John, Mount Farm, Cupar-Fife
1911 Small, John, Auctioneer, Cupar-Fife
1904 Small, Robert, Ladybank
1904 Smith, Andrew, Canada Cottage, Ceres
1911 Smith, Andrew, Balmalcolme, Kingskettle
1911 Smith, D. D., Seedsman, St Catherine Street, Cupar-Fife
1897 Smith, James M., Cults, Pitlessie
1886 Smith, Thomas, Inverdovat, Newport
1915 Smith, W., Rothes Estate Office, Leslie
1893 Smith-Sligo, Archibald D., of Inzievar, Oakley, Fife
1888 Sprot, Colonel Sir A., of Garnkirk and Stravithie, Bart., C.M.G., M.P., Stravithie House, Stravithie
1919 Steele, George, Lalathan, Kennoway
1876 Stenhouse, J. S., of Northfod, Dunfermline
1907 Stevenson, Thomas, Sauchenbush, Kirkcaldy
1892 Stewart, Hugh, Struthersbarns, Cupar-Fife
1904 Stewart, John, Struthers, Cupar-Fife
1912 Stirrat, James, Higham, Newburgh, Fife
1900 Storrar, Christopher, Dalginch, Markinch
1890 Storrar, David, Land Surveyor, Shiels, Ladybank
1912 Storrar, George, Nether Urquhart, Gateside, Fife
1912 Storrar, J. W., Melville Home Farm, Ladybank
1891 Storrar, Richard, Pyestone, Markinch
1905 Strang, Robert, of Collessie Mill, Ladybank
1911 Struthers, James, Church Street, Ladybank
1919 Sutherland, Peter T., Estate Office, Charleton, Colinsburgh
1913 Syme, William, Craigie, Lenchars
1912 Taylor, John, Levenmouth, Leslie
1875 Thom, James F., Wellsgreen, Windygates
1879 Thom, R. D., of Pitlochie, Gateside
1913 Thompson, David, Campbell Street, Dunfermline
1912 Thoms, David Wedderburn, of Feddinch, St Andrews
1899 Thomson, David (Flear & Thomson), Dunfermline
1902 Thomson, George, Balhoufie, Anstruther
1897 Thomson, James, Orkie Mills, Kingskettle

Admitted
1915 Thomson, John, Carneil, Carnock, Dunfermline
1896 Thomson, John R., of Orkie Miln, Kingskettle
1911 Thomson, Joseph, Blairfarm, Dysart
1914 Thomson, William, Kirkton Farm, Cowdenbeath
1896 Thornton, Robert, North Pitkinnie, Cardenden
1877 Tod, James, Easter Cash, Strathmiglo
1912 Tullis, George, George Hotel Stables, Kirkcaldy
1896 Tulloch, John B., Dales, Inverkeithing
1893 Turnbull, Mark, Dunholm, Kingsbarns
1912 Turnbull, C. W., Newton, Auchtertool
1896 Waldie, Adam, Callange, Cupar-Fife
1878 Walker, Archibald, Banker, Auchtermuchty
1911 Walker, James, Garvock, Dunfermline
1911 Walker, Peter, of Kingask, Cupar-Fife
1912 Walker, Thomas, Kilmaron, Cupar-Fife
1911 Wallace, David, Nether Urquhart, Gateside
1904 Wallace, Henry P., Upper Vagask, St Andrews
1891 Wallace, John, Elphinstone, Lundin Links
1908 Wallace, Robert, Kincaple, Guardbridge
1912 Wallace, Robert Walker, of Halbeath, Dunfermline
1883 Walls, Robert, Grange, Burntisland
1892 Wardlaw, John, *last known address*, Tough Mill, Dunfermline
1911 Watson, Edward E., Newmills, Cupar-Fife
1904 Watson, Henry, National Bank Buildings, Anstruther
1893 Watt, Frank M., of Caldwells, Ladybank
1911 Watt, James, Gowan Park, Cupar-Fife
1882 Watt, W., Seed Merchant, Cupar-Fife
1905 Webster, John, Grange of Lindores, Newburgh
1890 Webster, Thomas, Struan Park, Cupar-Fife
1884 Weighton, J. G., Priorletham, St Andrews
1912 Weir, Sam. W., Balcomie, Crail
1912 Welsh, David, Pitconochie Farm, Dunfermline
1909 White, John, Newraw, Kincardine-on-Forth
1912 Whyte, William, Gilliesfaulds, Cupar
1911 Wilson, Alexander, Drumcooper Farm, Crossgates
1919 Wilson, Andrew, Anstruther Farm, Anstruther
1912 Wilson, A. K., Pipeland Farm, St Andrews
1913 Wilson, John, East Colquhally, Lochgelly
1892 Wilson, John Hardie, D.Sc., F.R.S.E., St Andrews—*Free Life Member*
1880 Wilson, P., Albert Crescent, East Newport, Fife
1909 Wilson, Quintin, Droverhall Farm, Crossgates
1906 Wilson, Robert, Spittal Farm, Cardenden
1900 Wilson, Robert S., Blinkbonny, Newburgh
1912 Wilson, Thomas, Crossgate, Cupar-Fife
1912 Wingate, James, East Finglassie, Leslie, Fife
1912 Wingate, William, Byresloan, Markinch
1912 Wylie, Robert E., High Street, Newburgh, Fife
1859 Young, A., Kinloch, Collessie
1898 Young, David, Crosslyn, St Andrews
1909 Young, William, Craigencalt, Kinghorn
1875 Younger, J. B. B. C., Kinghorn

FORFAR

(Western District).

Admitted
1910 Adamson, William G. D., Wemyss, Forfar
1901 Airlie, Earl of, Cortachy Castle, Kirriemuir
1884 Anderson, James, Viewbank, Leysmill, Arbroath
1903 Arnot, Patrick, Glamis Mains, Glamis
1902 Ballingall, D. L., Cransley, Invergowrie
1905 Ballingall, William O., Cookston, Meigle
1889 Batchelor, Francis M., Craigie, Dundee
1890 Baxter, Sir George W., Bart., Invereighty, Forfar
1912 Bell, Miss H. A. C., Taycliff, Broughty Ferry
1912 Bell, Miss Robina M., Taycliff, Broughty Ferry
1894 Bell, William, Balnuith, Dundee
1904 Bell, W. W., Auchtertyre, Newtyle
1908 Bishop, William B., Fletcherfield, Kirriemuir
1899 Boyd, Charles, Solicitor, Coupar-Angus
1899 Brown, Wm. Donaldson, Drumgley, Forfar
1911 Brunton, J. N., 10 Airlie Terrace, Dundee
1882 Buttar, Thomas A., Corston, Coupar-Angus—*Free Life Member*
1901 Campbell, J. Douglas, Travebank, Barry
1915 Carnegie, John A., Secretary, Agricultural Association, Union Bank Buildings, Kirriemuir
1906 Clark, Allan, East Nevay, Meigle
1896 Clunie, George K., Whitfield, Dundee
1893 Cox, Edmund C., Marcus, Forfar
1855 Croll, John, Craigruach, Broughty Ferry
1887 Don, H. G., c/o Don Bros., Buist & Co., Ltd., Dundee
1916 Drysdale, R. Douglas, Haughs of Cossans, Forfar
1883 Duncan, John, Muirhouses, Kirriemuir
1879 Duncan, Patrick G., East Memus, Kirriemuir
1881 Duncan, W. G., Balkemback, Tealing, Dundee
1895 Durkie, Alexander F., Mill of Mains, Dundee
1914 Fairlie, John M., Eagle Buildings, Trades Lane, Dundee
1915 Fairweather, George A., Maritime Buildings, Dundee
1912 Fenton, David, Gask, Coupar-Angus
1919 Fleming, James, Barns of Claverhouse, Dundee
1894 Fraser, H. E., M.D., Medical Superintendent, Royal Infirmary, Dundee
1867 Gardyne, Colonel C. G., Finavon, Forfar
1908 Gibson, John, Cairnleith, Kirriemuir
1919 Glen, Allan, Murroes Farm, Dundee
1905 Gourlay, Charles G., *last known address*, The Croft, Longforgan
1890 Gourlay, Henry, *last known address*, Balingry House, Dundee
1915 Grant, David, Upper Tulloes, Forfar
1919 Grant, James, Kingennie House, Dundee
1890 Grant, John, Craig Mills, Dundee
1906 Hamilton, John, Dronley, Dundee
1888 Hunter, William, Beech Tower, Broughty Ferry, Dundee
1909 Hutcheson, Andrew Cooper, Burnmouth, Newtyle
1918 Ireland, Miss E. Lindsay, Balmirmer, Arbroath
1899 Johnston, David, Bank of Scotland Buildings, Dundee

Admitted
1890 Kidd, David, West Ardler, Coupar-Angus
1904 Kilgour, James, Westbank, Longforgan, Dundee
1893 Laird, W. P., 20 High Street, Dundee
1906 Langlands, James H., 31 Murraygate, Dundee
1905 Ligertwood, James, Tay Oilcake Works, Stannergate, Dundee
1890 MacIntyre, Peter, Denfind, Monikie, Dundee
1890 M'Kay, Alexander, Mains of Auchterhouse, Lundie, Dundee
1897 M'Laren, Alexander, Grain and Straw Merchant, Dundee
1902 M'Laren, John, of Balgillo, Forfar
1905 M'Laren, John, jun., Balgillo, Tannadice, Forfar
1895 Martin, James, 286 Eddelston Street, Dundee
1891 Martin, Robert, Baldovie, Kirriemuir
1894 Maxwell, David, Ballindarg, Forfar
1879 Menzies, James, *last known address*, Tarbrax, Inverarity, Forfar
1885 Menzies, W. D. Graham, of Hallyburton, Coupar-Angus
1909 Millar, James, Bulcalk, Dundee
1894 Mitchell, James, Nether Migvie, Kirriemuir
1900 Morgan, Andrew, Estates Office, Glamis
1914 Motion, John, Keillor Farm, Coupar-Angus
1905 Munro, Sir Hugh T., Bart., Lindertis, Kirriemuir
1873 Murray, John, Balruddery, Dundee
1891 Murray, Joseph, Dryburgh, Lochee, Dundee
1887 Myles, Robert, Glencoul House, Tannadice
1900 Nicol, A. P., Ochterlony, Guthrie
1891 Nicoll, William, Carsebank, Forfar
1906 Ogilvy, Sir Herbert K., of Inverquharity, Bart., Baldovan House, Dundee
1904 Ogilvy, William, Lisden, Kirriemuir
1898 Ovenstone, Charles Barrie, Duntrune, Dundee
1890 Pattullo, David, Pitcur, Coupar-Angus
1891 Pattullo, John, Barnhill, Broughty Ferry
1898 Ralston, Claude L., Glamis
1896 Ralston, Gavin, Glamis House, Glamis
1913 Rattray, Richard, Parkconan, Arbroath
1915 Reid, David, St Margarets, Letham, Forfarshire
1905 Reid, James C., Kilmundie, Glamis
1897 Rennie, William, *last known address*, Petterden, Tealing, Dundee
1914 Roberts, Henry, Nether Ballunie Farm, Coupar-Angus
1903 Rogers, John Y., Rose Mill, Dundee
1881 Rogers, William, Ph.D., Rose Mill, Dundee
1896 Rough, William, Longbank, Kirriemuir
1890 Scott, George C., Reresmount House, Broughty Ferry
1914 Shield, George R., Estate Office, Newtyle
1883 Shield, J. T., Taymouth Place, Broughty Ferry
1905 Simpson, James, Newmill, Dunnichen, Forfar
1908 Smith, George K., 7 Murraygate, Dundee
1909 Smith, Herbert, The Binn, Fowlis Easter, Dundee
1890 Spreull, Andrew, V.S., 53 Magdalen Green, Dundee
1914 Steele, John, 3 Exchange Street, Dundee
1896 Steele, Thomas, Foulis Easter, Dundee
1894 Stewart, John F., Noranbank, Forfar
1893 Stewart, William, Auchlishie, Kirriemuir

Admitted
1915 Stewart, William, Dean Bank House, Glamis
1908 †Strathmore, Earl of, Glamis Castle, Glamis
1908 Thoms, William L., Benvie, Dundee
1893 Thomson, David Couper, 'Courier' Office, Dundee
1902 Warden, James L., Easter Meathie, Forfar
1899 Waterston, David, Estates Office, Glamis
1880 Watson, William, Downieken Farm, Dundee
1891 White, J. Martin, of Balruddery, Dundee
1861 Whitton, Andrew, of Couston, Newtyle
1899 Whyte, Alexander, Easter Denoon, Glamis
1884 Whyte, Archibald, Inverquharity, Kirriemuir
1890 Whyte, James, Upper Hayston, Glamis
1871 Whyte, John, West Denoon, Glamis
1893 Whyte, William, Spott, Kirriemuir
1881 Wilkie, James, Solicitor, Kirriemuir
1896 Will, Alexander, *last known address*, Clepington, Dundee
1878 Wilson, T. Mackay, Solicitor, Kirriemuir
1909 Winter, Edgar, Cortachy Post Office, Kirriemuir
1897 Wyllie, William, Drumcluie, Kirriemuir
1903 Young, John B., Berryhill, Fowlis-Easter, Dundee

KINROSS.

1882 Adam, Sir Chas. E., of Blairadam, Bart., 5 New Sq., Lincoln's Inn, London, W.C.
1861 Anderson, Robert H., Tillyrie Cottage, Milnathort
1911 Archibald, A. E., Arlary, Milnathort
1893 Barclay, John, Pittendreich, Kinross
1900 Barclay, Patrick, Manorleys, Glencraig
1911 Baxter, John, Myrtle Bank, Fossoway
1918 Black, James, of Tillywhally, Milnathort
1911 Clark, James, Gospetry, Milnathort
1896 Dawson, James A. Ramage, of Balado, Kinross
1912 Dougall, William, Mawhill Farm, Kinross
1911 Downie, Alex. M., Avenue Road, Kinross
1902 Falconer, William K., Solicitor, Kinross
1884 Flockhart, William, of Annacroich, Kinross
1911 Fotheringham, David, Hilton of Burleigh, Milnathort
1907 Gifford, Adam, Flockhouse, Blair Adam
1919 Greig, Thomas Stalker, of Harelaw, Fossoway
1872 Hutchison, J. T., of Moreland, Kinross
1912 Johnstone, John Maxwell, Estate Office, Kinross
1905 Lambie, George, Waulkmill, Milnathort
1911 M'Callum, John, Touchie, Milnathort
1911 M'Donald, John, Loch Leven Farm, Kinross
1911 M'Farlane, Bartholomew, Cockairnie, Kinross
1911 M'Farlane, William, Cockairnie, Kinross
1911 M'Menemy, John Joseph, Parkhouse, Kinnesswood
1913 M'Rosty, Alexander, Cuthill Towers, Milnathort
1899 Meiklem, Robert, Lochran, Blair Adam
1878 Mitchell, James, Ardallie, Fossoway
1912 Montgomery, Sir Basil Graham, of Stanhope, Bart., Kinross House, Kinross

Admitted
1882 Montgomery, H. James, of Hattonburn, Milnathort
1907 Morton, John, A.P.D., No. 1 Dispersal Unit, Kinross
1904 Muirhead, Alexander, Hatchbank, Kinross
1905 Muirhead, Thomas, Bankhead, Fossoway
1915 Page, David, Peatknowne Works, Milnathort
1911 Paton, J. Herbert, of Lethangie, Kinross
1911 Pullar, Robert, Sunnyside, Blair Adam
1904 Reid, Robert M., Tillyrie, Milnathort
1906 Rycroft, Major-General William Henry, C.B., C.M.G., Ard Gairney, Kinross
1890 Simpson, James, of Mawcarse, Milnathort
1911 Sloan, William, Goudieraunet, Kinross
1905 Smith, James, Banker, Kinross
1911 Stewart, Hugh, jun., Craigowmill, Milnathort
1873 Terris, J., jun., Barns House, Blair Adam
1884 Tod, William, of East Brackly, Kinross
1907 Wilson, David, Viewlands, Milnathort
1911 Wilson, J., Bracklemoss, Kinross

PERTH

(Perth Show Division).

1913 Adam, Archibald, Westmains, Auchterarder
1908 Adamson, J. W. Mackie, Duncrevie, Glenfarg
1913 Allan, John D., Culthill Implement Works, Murthly
1904 Allan, William, Croft House, Craigie, Perth
1918 Allan, William A., Kinnon Park, Methven, Perth
1909 Allison, Hugh, Pleasance Farm, Couper-Angus
1878 Anderson, Peter, Duneaves, Fortingal
1890 Andrew, James M., Cray, Glenshee, Blairgowrie
1903†Atholl, The Duke of, K.T., C.B., M.V.O., D.S.O., Blair Castle, Blair Atholl
1890 Balfour, Francis, Kindrogan, Blairgowrie
1902 Ballingall, Simpson, Parkfield, Scone, Perth
1893 Baxter, William, Tophead, Stanley
1919 Bell, Captain Edwin A., Balloch, Alyth
1899 Bell, George, South Inchmichael, Errol
1904 Bell, H. J., 18 Charlotte Street, Perth
1887 Bell, James H., of Rossie, Forgandenny
1912 Bell, Robert Duff, Craigenvar, Scone, Perth
1895 Bernard, John Mackay, of Dunsinnan, Perth
1902 Bett, James Esson, Leadkitty, Dunning
1884 Bett, Thomas, Dalnalinn, Aberfeldy
1899 Beveridge, James, Upper Mains of Kinnaird, Inchture
1908 Bishop, James, of Cronan, Couper-Angus
1883*†Breadalbane, The Marquis of, K.G., Taymouth Castle, Aberfeldy
1913 Brown, George, Cloag, Methven
1891 Brown, John, 21 York Place, Perth—*Free Life Member*
1871 Brown, Peter, Stanley
1915 Brown, Peter, Manager, Wester Cluny, Pitlochry
1897 Bruce, George, Comely Bank, Bridgend, Perth

Admitted
1910 Bruce, R. S., Drumkilts Mains, Meigle
1912 Bruges, William, Laighwood, Dunkeld
1907 Bryden, James G., New Mains, Scone, Perth
1904 Buik, P. R., 75 George Street, Perth
1902 Bull, Arthur G., Scottish Live Stock Insurance Co., Tay Street, Perth
1907 Bullough, Ian, Meggernie Castle, Aberfeldy
1913 Burnfield, John, Over Benchill, Stanley
1910 Buttar, Ralph S., Strathview, Couper-Angus
1877 Butter, Albert, Union Bank, Perth
1895 Butter, Archibald Edward, Pitlochry
1908 Butter, Charles A. J., of Faskally, Cluniemore, Pitlochry
1904 Calder, John J., Ardargie, Forgandenny
1901 Callander, William, Ruthvenfield House, Almondbank, Perth
1888 Cameron, Donald, Roro More, Aberfeldy
1896 Cameron, John, Cairnbeddie, St Martins, Perth
1903 Cameron, John, Middleton of Fonab, Pitlochry
1892 Campbell, Alexander, Boreland, Fearnan, Killin
1879 Campbell, Duncan, Balnacraig, Fortingall
1913 Campbell, Duncan, Turrerich, Amulree, Dunkeld
1896 Campbell, Dun., 7 Queen's Avenue, Perth
1912 Campbell, Hugh M., Dunsinnan Estate Office, Balbeggie, Perth
1896 Campbell, Peter, Kerrowmore, Glenlyon, Aberfeldy
1901 Carmichael, James L., of Arthurstone, Meigle
1879 Chalmers, John, Diamond, Bankfoot, Perth
1888 Chapman, Alexander, Wester Buchanty, Glenalmond, Perth
1912 Chisholm, William, Eastfield, Murthly
1871 Chrystal, George, Engineer, Perth
1904 Clark, Archibald, Dalreoch, Amulree, Dunkeld
1912 Clark, George Aitken, of Straloch, Enochdhu, Blairgowrie
1906 Clark, Thomas, Pitlandie Farm, Stanley
1915 Cochrane, Alexander, Parkhead, Alyth
1905 Cochrane, Andrew, Craig Isla House, Alyth (Calton House, 30 Stevenson Street, Glasgow)
1896 Constable, Robert, Mains of Fowlis, Invergowrie
1890 Cox, Albert E., of Dungarthill, Dunkeld
1890 Cox, Alfred W., Glendoick, Glencarse
1890 Cox, William Henry, of Snaigow, Murthly
1905 Crichton, Robert, Burrelton, Couper-Angus
1911 Cunningham, Thomas, Little Findowie, Dunkeld
1907 Cunningham, William, Auchtenny, Forgandenny
1914 Dewar, The Hon. John, Dupplin Castle, Perth
1919 Dickie, James W., Loak Farm, Stanley
1896 Dickie, William B., of Whitehills, Inchture
1899 Doig, James, Haughend, Meigle
1894 Dougall, James, Knowhead, Guildtown, Perth
1906 Douglas, Daniel, Millwright, Perth
1911 Doune, Lord, Kinfauns Castle, Perth
1879 Dow, James, Tarsappie Cottage, Perth

Admitted
1903 Duncan, James, Coupar Grange, Coupar-Angus
1896 Dyce, William, 24 St John Street, Perth
1894 Fenwick, James, Kirkhill, Redgorton, Perth
1904 Ferguson, Andrew Mitchell, Banker, Alyth
1905 Ferguson, William S., Newton of Ballunie, Coupar-Angus
1905 Ferguson, William Scott, Bennathie, Coupar-Angus
1904 Fergusson, Alexander, Dalcapon, Ballinluig
1897 Forbes, James, Deanshaugh, Strathbraan, Dunkeld
1894 FORTEVIOT, Lord, of Dupplin, Perth
1912 Foster, Major Frederic Charles, of Faskally, Pitlochry
1892† Fothringham, Walter Steuart, of Fothringham and Murthly
1912 Fraser, Alexander, 55/7 High Street, Perth
1879 Fraser, John M., of Invermay, Forteviot
1897 Fraser, John, Glenfoot, Abernethy, Perthshire
1904 Fraser, William Lovat, Invermay, Forteviot
1905 Fullarton, James, Redstone, Coupar-Angus
1910 Fulton, James, Knollhead, Kettins, Coupar-Angus
1900 Fyfe-Jamieson, James F., Ruthven, Meigle
1890 Gardiner, Thomas J., Banchory, Coupar-Angus
1912 Gay, William, Carey, Abernethy
1871 Geekie, R., of Baldowrie, Rosemount, Blairgowrie
1875 Gillespie, James J., Brier Bank, Glasgow Road, Perth
1911 Glen, William, Balgarvie, Scone
1896 Goodall, William, Stanley Farm, Stanley
1887 Gow, George, Rannoch
1896 Graham, Alexander, Hill, Errol
1881 Graham, A. G. Maxton, of Cultoquhey, Redgorton, Perth
1896 Graham, John, Tippermallo, Methven, Perth
1904 Grant, Alfred B., Friarton, St Martins, Perth
1887 Grant, George, Lilly Bank, Blairgowrie
1899 Grant, W. J. B., Bengarth, Blairgowrie
1880 Gray, George, Bowerswell, Perth
1894 Gray, Thomas, Elibank Villa, Perth
1895 Greig, Thomas, of Glencarse, Perth
1904 Grimond, John, Oakbank, Blairgowrie
1897 Guild, William, Laurel Villa, Bankfoot, Perthshire
1903 Haggart, James D., Breadalbane Mills, Aberfeldy
1890 Halkett, John Gilbert Hay, Balendoch, Meigle
1896 Halley, Robert, Grain Merchant, Perth
1889 Hardie, David, Factor, Estates Office, Errol
1905 Harrison, Rev. John, Aberfeldy
1905 Hart, James Maule, Nether Garvock, Dunning
1904 Hay, James Drummond, of Glenearn, Bridge of Earn
1913 Hay, Stewart J., Mains of Cultmalundie, Tibbermore, Perthshire
1890 Henderson, William, of Lawton, Coupar-Angus
1904 Hill, R. Wylie, of Balthayock, Perth

Admitted
1897 Hogg, William H., Hallyburton Estate Office, Coupar-Angus
1894 Hollingworth, Thomas, New Mains, Inchture
1878 Home-Rigg, James, Riversdale, Bridge of Earn
1919 Howison, A. W., of Lochbank, Blairgowrie
1913 Hunter, James Gardyne, of Horn, Errol
1911 Hunter, R. G., Newmains, Fingask, Errol
1904 Hunter, Wm. C., W.S., of Arngask, Glenfarg (15 Hill Street, Edinburgh)
1903 Inglis, Robert, Factor, Blair Atholl
1913 Irving, Edward (Richard Garret & Sons, Ltd., Leiston), South Street, Burreltton, Perthshire
1884 Jameson, Martin, Fernhill, Perth
1904 Keir, David, Ladywell, Dunkeld
1904 Kidd, James, Mains of Errol, Errol
1896 Kinloch, Charles Y., of Gourdie, Murthly
1879 KINNAIRD, Lord, Rossie Priory, Inchture
1904 Law, William, Windyedge, Perth
1908 Leslie, Peter, Brigton, Ruthven, Meigle
1894 Leslie, Thomas, Kinloch Arms Hotel, Meigle
1919 Leslie, William, Bush, Balbeggie
1908 Lindsay, Alexander, 143 South Street, Perth
1904 Livingston, James A., Campsie, Guildtown, Perth
1884 Lumsden, J. D., Huntingtowerfield, Perth
1899 M'Beath, William, 2 Atholl Villa, Pitlochry
1915 M'Callum, James, West Mill Farm, Forgandenny
1904 M'Cash, William F., Cornhill, Perth
1905 M'Cracken, J., Grange, Perth
1884 Macdiarmid, Donald, Bank of Scotland, Aberfeldy
1912 Macdiarmid, Hugh, Camusericht, Rannoch Station
1919 M'Diarmid, Michael Grieve, Finnart, Rannoch Station
1896 Macdonald, Alexander, Meggernie Estate Office, Glenlyon, Aberfeldy
1899 Macdonald, A. J., Rossie Priory, Inchture
1913 Macdonald, David Donald, Atholl Arms Hotel, Blair Atholl
1887 Macdonald, Duncan, Urlar, Aberfeldy
1919 Macdonald, James, Pitlowie, Glencarse, Perthshire
1912 Macdonald, James Allan, Urlar, Aberfeldy
1904 Macdonald, John, Saucher, Collace, Perth
1895 M'Donald, J. M., Welton, Blairgowrie
1880 Macdonald, Montague, of St Martins, Perth
1871 Macdonald, William, *last known address*, "The Atholl," Pitlochry
1896 M'Dougall, Donald, Dall, Aberfeldy
1874 Macduff, Alexander, of Bonhard, Perth
1901 M'Gilchrist, James, Bankhead, Forteviot
1883 M'Gillewie, R., Union Bank, Dunkeld
1882 M'Gregor, Athole, Ard Choille, Perth
1909 M'Gregor, Thomas, Millbank, Coupar-Angus
1904 M'Inroy, James, Baldinnies, Dunning
1919 M'Intosh, Henry James, Meikle Trochry, Dunkeld
1914 MacIntosh, Peter, Edradour Distillery, Coilavoulin, Pitlochry

Admitted
1894 M'Intosh, Thomas, Ardargie, Forgandenny
1908 M'Kearney, John, 21 Melville Street, Perth
1885 Mackenzie, R. W. R., Stormontfield, Perth
1896 Mackinlay, James, *last known address*, Balnahanait, Glenlyon, Aberfeldy
1896 Mackinnon, John, Auctioneer, Blairgowrie
1905 M'Lagan, Robert P., 36 Caledonian Road, Perth
1896 M'Laggan, J. G., Woodburn Cottage, The Cairnies, Glenalmond, Methven, Perth
1901 M'Laren, Hugh, *last known address*, Blackhill Villa, Aberfeldy
1909 M'Leish, John, Wester Cairnie, Forteviot
1892 M'Naughton, Alexander, Manufacturer, Pitlochry
1896 MacNaughton, James, Edrogoll, Aberfeldy
1896 MacNaughton, Peter, Remony, Kenmore
1896 Mansfield, The Earl of, Scone Palace, Perth
1901 Marshall, David, Joint County Clerk, Perth
1901 Marshall, James M'L., of Bleaton Hallet, Blairgowrie
1896 Martin, H., Flowerdale, Kinrossie, Perth
1900 Martin, James, Keithick Mills, Coupar-Angus
1884 Matthew, John M., of Auchmague, Perth
1904 Meldrum, Andrew M., Solicitor, Pitlochry
1909 Menzies, Peter, Bogtonlea, Dunning
1893 Menzies, Robert, Millhaugh, Greenfield, Methven
1898 Menzies, Robert, Station Hotel, Aberfeldy
1904 Michie, Thomas, Clunskea, Pitlochry
1885 Middleton, Colonel W. F., Baldarroch, Murthly
1893 Millar, James Robert, Flawcraig, Errol
1896 Millar, William, Foxhall, Coupar-Angus
1890 Miller, George A., W.S., Perth
1896 Miller, William, Woodhead, Aberdalgie, Perth
1919 Miller, William S., of Balmanno, Bridge of Earn
1877 Mitchell, Hugh, Banker, Pitlochry
1889 Moncreiffe, Sir Robt. D., of Moncreiffe, Bart., Bridge of Earn
1903 Moray, Earl of, Kinfauns Castle, Perth
1898 Morgan, William F., Ardgaith, Glencarse
1905 Morison, William, Newmiln, Perth
1896 Morrison, John, West Inchmichael, Errol
1896 Morton, David, North Muirton, Perth
1879 Morton, R. G., Engineer, Errol
1904 Mosson, Thomas, Potato Merchant, Coupar-Angus
1904 Munro, Major Alexander R., Melrose, Kinnoull Terrace, Perth
1883 Munro, Chas., Union Bank, Aberfeldy
1908 Munro, Charles D., Solicitor, Aberfeldy
1909 Munro, Henry, Myreside, Glasgow Road, Perth
1908 Munro, William, Bank Agent, Aberfeldy
1895 Murray, Hon. Alexander David, of Pitfour Castle, Glencarse, Perth
1912 Murray, Archibald P., Logie House, Methven
1871 Murray, C. A., Taymount, Stanley
1896 Murray, David, Balgersho Works, Coupar-Angus

Admitted
1900 Murray, E. Mackenzie, Woodside House, Coupar-Angus
1905 Nairn, William, M.R.C.V.S., 63 High Street, Blairgowrie
1912 Nasmyth, Norman J., of Glenfarg, Abernethy, Perth
1896 Nimmo, Robert, 6 Kincarrathie Crescent, Perth
1912 Niven, William Sharp, The Loan, Errol
1911 Noble, Thomas, Estate Office, Kenmore, Aberfeldy
1904 Norie-Miller, Francis, of Cleeve, Perth
1905 Ogilvy, John C., Parkhead, Blairgowrie
1905 Ogilvy, John Wedderburn, yr. of Ruthven, Meigle
1908 Ogilvy, W. G. Wedderburn, Silvie, Meigle
1885 Paterson, John S., 12 Pitcullen Terrace, Perth
1880 Paton, James, Obney, Bankfoot
1893 Paton, William B., Monorgan, Longforgan
1892 Paterson, Charles J. G., of Castle Huntly, Longforgan
1900 Pattullo, H. M., Langlogie, Meigle
1904 Pattullo, Robert C., Bankhead, Alyth
1893 Pattullo, William, Fullarton, Meigle
1901 Pearson, James C., Auchlatt, Pitlochry
1896 Peddie, David, Tullylumb, Perth
1891 Pitcaithly, George, West Dron, Bridge of Earn
1877 Pople, George, Newhouse, Perth
1904 Pople, W. G., Newhouse, Perth
1881 Powrie, Archibald, *last known address* Lairwell, Perth
1900 Prain, John, Invergowrie
1909 Provan, James, Wallacetown, Bridge of Earn
1896 Pullar, Albert E., Durn, Perth
1897 Pullar, Charles, Muirhall, Perth
1884 Rae, W. A., Douglasfield, Murthly
1890 Ramsay, Professor, Drumore, Blairgowrie
1913 Rattray, Colonel P. Burn Clark, Craighall-Rattray, Blairgowrie
1919 Reid, James, Grafton Villa, Auchterarder
1897 Reid, James, Pictstonhill, Perth
1912 Richmond, T. Gordon, Kemlock House, Meigle
1904 Ritchie, James, The Neuk, Rosemount, Blairgowrie
1900 Robertson, Charles, Trochrie, Strathbraan, Dunkeld
1904 Robertson, Charles, West Buttergask, Coupar-Angus
1893 Robertson, Daniel, Rosemount, Tullylumb Terrace, Perth
1910 Robertson, Ernest F. (of Auchleeks, Blair Atholl), Craigenveoch, Aberfoyle
1899 Robertson, George, Innernytie, Stanley
1914 Robertson, James, Balanloan, Blair Atholl
1876 Robertson, J. S., of Edradynate, Strathtay
1901 Robertson, Theo., Auctioneer, Perth
1883 Robertson, William, Potato Merchant, Perth
1879 Robertson, William, Engineer, Perth
1913 Robertson, William, Forehill, Murthly
1883 Rollo, James A., County Club, Perth
1912 Rose, William, Haugh of Ballechin, Ballinluig
1897 Roy, William, Kirkton of Mailer, Perth
1906 Salmond, Charles S., Lawmuir, Methven
1909 Scobie, John J., West View, Dunkeld Road, Perth
1911 Scott, Charles Howard, Draffin, Coupar-Angus
1899 Scott, D. W., Garrymore, Blairgowrie

Admitted
1903 Scott, Frank, Jeaniebank, Old Scone, Perth—*Free Life Member*
1898 Scott, James, *last known address*, Inveralmond House, Perth
1879 Scott, John, Eastertyre, Ballinluig
1905 Scott, John, Road Surveyor, Shielhill, Stanley
1912 Scott, Thomson, Den Cottage, Kirkwynd, Abernethy
1904 Scrimgeour, William, Newrow, Balgowan, Methven
1919 Sharp, Andrew, Clatheymore, Tibbermore, Perth
1900 Shorthouse, Alexander, North Ardittie, Methven
1896 Simpson, James, Northbank, Perth
1914 Simpson, John J., Estate Office, Dupplin Castle, Perth
1889 Sinclair, John, Pothill, Auchterarder
1914 Smith, Alexander, Cranley, Meikleour, Perth
1891 Smith, James, Cranley, Meikleour
1919 Smith, J. B., Blairgowrie
1896 Smith, John F., Eastfield, Bridge of Earn
1905 Smith, Robert, Burnside Farm, Stanley
1876 Smythe, Colonel David M., of Methven, Perth
1889 Speedie, Matthew, Pitversie, Abernethy
1881 Speid, James, Forneth, Dunkeld
1896 Stark, James, Coates of Fingask, Perth
1912 Stead, Louis N. Trotter, Ballindean, Inchture
1890 Stead, W. F., Ballindean House, Inchture
1896 Stephenson, John B., Hillwood, Glenfarg
1891 Stevens, A. B., Mains of Kilgraston, Bridge of Earn—*Free Life Member*
1893 Stewart, Alexander Blair, Balnakeilly, Pitlochry
1899 Stewart, Alexander, Netherton, Fonab, Pitlochry
1905 Stewart, Archibald A., Glenfernate, Blair Atholl
1898 Stewart, Duncan, Mains of Balyoukan, Pitlochry
1881 Stewart, Duncan D., Ardenlea, Pitlochry
1888 Stewart, H. D., Strathgarry, Blair Atholl
1911 Stewart, James, Clachan of Struan, Calvine
1900 Stewart, James, Friarton, Perth
1904 Stewart, James, Mains of Pittendreigh, Meikleour

Admitted
1896 Stewart, Peter, Kirkton of Abernyte, Inchture
1894 Stewart, William Middleton, Tullypowrie, Strathtay
1913 Stirton, William, Gellybanks, Stanley
1891 Strachan, James, Millhill, Inchture
1909 Strang, Gavin, Moneydie, Redgorton
1896 Stratton, David, Feus, Logiealmond, Perth
1901 Stuart, Major John, The Lodge, Strathyre
1893 Sutherland, William, Peel, Tibbermuir, Perth
1907 Sym, Jas. Pitcairn, jun., West Kinnochtry, Coupar-Angus
1890 Tasker, George, Arnbog, Meigle
1899 Tasker, William, Camno, Meigle
1911 Tedcastle, Robert Joseph, Balmacneil, Ballinluig
1896 Thom, James, Cambusmichael, Guildtown, Perth
1918 Thomas, James, Bowhouse, Balbeggie, Perth
1905 Thomson, Alexander, Springfield, Coupar-Angus
1901 Thomson, James Meikle, Viewbank, Coupar-Angus
1911 Thomson, William, Mill of Airntully, Stanley
1906 Thow, John, Rossie Farm, Dunning
1896 Todd, William D., The Poplars, Abernethy
1895 Walker, Graham W., *last known address*, La Quinta, Scone
1909 Warnock, Archibald, Gateside, Meikleour
1908 Waterson, John, Stewart Tower, Stanley
1903 Watson, George, Damside, Kinrossie, Perthshire
1901 Watson, William, Inchcoonans, Errol
1881 Wedderspoon, Thomas, Castleton, Meigle
1904 White, Charles D., Guardswell, Inchture
1892 Whitson, W., Isla Park, Coupar-Angus
1899 Wilson, James G., Kinfauns Estates Office, Rockdale, Perth
1913 Wright, J. Moncrieff, of Kinmonth, Bridge of Earn
1913 Wyllie, J. W., Royal Bank Buildings, Perth
1896 Wyllie, Scott, Milton of Luncarty, Redgorton, Perth
1919 Wyllie, William, Pittendynie, Redgorton, Perth
1894 Wynd, David, Newbigging, Errol

NUMBER OF MEMBERS, 924.

3.—STIRLING DIVISION.

EMBRACING THE

COUNTIES OF CLACKMANNAN, DUMBARTON, PERTH (STIRLING SHOW DIVISION), AND STIRLING.

CLACKMANNAN.

Admitted
1919 Adam, James, Meadowend, Clackmannan
1880 Alexander, James, Box No. 3, Post Office, Alloa
873*† Balfour of Burleigh, Lord, K.T., Kennet, Alloa
1889 Blair, Charles, Glenfoot, Tillicoultry
1905 Bleloch, James, Estate Office, Dollarbeg, Dollar
1868 Broadwood, T., East Devon Lodge, Dollar
1891 Cairns, John, Balquharn, Menstrie
1910 Christie, Miss Ella R., of Cowden, Dollar
1906 Cordiner, Matthew, Northfield, Cambus, Clackmannan
1892 Dobie, W. H., of Dollarbeg, Dollar
1918 Drysdale, William, King o' Muirs, Alloa
1919 Finlayson, John, Orchard Farm, Cambus, Clackmannan
1899 Fisher, John, Jellyholm, Alloa
1897 Forbes, Robert, Kennet, Alloa
1910 Grant, James, Viewforth, Alloa
1900 Gray, Henry, Hawkhill, Kincardine-on-Forth
1900 Gray, Thomas, Seed and Manure Merchant, Alloa
1909 Grindlay, William, Grassmainston, Clackmannan
1896 Haig, Alexander P., Blairhill, Rumbling Bridge
1886 Haig, Robert, Dollarfield, Dollar—*Free Life Member*, 1887
1895 Hattersley, Neil S., Bridge Street, Dollar
1910 Henderson, John, Westerton, Dollar
1902 Henderson, Thomas, Nether Carsebridge, Alloa
1906 Inglis, George C., M.R.C.V.S., Bedford Place, Alloa
1909 Izat, A., of Balliliesk, Muckart, Dollar
1907 Kemp, William, 18 Erskine Street, Alloa
1900 Kerr, J. E., Harviestoun Castle, Dollar
1892 Kinross, D. A., Hillend, Clackmannan
1915 Lang, James, Linbank, Dollar
1909 Macfarlane, Edward H., Gartgreenie, Forrest Mill, Clackmannan
1898 M'Laren, William, Inch Farm, Kincardine-on-Forth
1893 M'Nab, Alexander, Middleton Kerse, Menstrie
1890 Mair, William, Gartary, Clackmannan
1890† Mar and Kellie, The Earl of, Alloa Park, Alloa
1909 Mitchell, James, Arns, Clackmannan
1900 Moir, Archibald P., Bank Street, Alloa
1908 Munro, Alexander (Wingate & Lowe), Alloa

Admitted
1893 Peebles, James, *last known address*, 3 Queen Street, Alloa
1904 Prentice, John W., Craigrie Farm, Clackmannan
1869 Robertson, Rev. A. Irvine, D.D., Clackmannan
1900 Roxburgh, Alexander L., Solicitor, Alloa
1918 Scott, W. M., Co-operative Society, Ltd., 11 Primrose Street, Alloa
1913 Steven, William, Middleton, Dollar
1915 Stirling, John, Parkhead, Alloa
1881 Stirling, Robert, Parkhead, Alloa
1909 Taylor, Luke, Alloa Park, Alloa
1908 Thomson, J., Claremont Street, Alloa
1890 Waddell, Robert, Bridge Street, Dollar
1899 Walker, James, Lornshill Farm, Alloa
1919 Watson, James, Craigton Farm, Clackmannan
1913 Watson, William, Broadcarse Farm, Clackmannan
1909 Westwood, John, Loanside Farm, Clackmannan
1909 Westwood, William, Inch of Ferryton, Clackmannan
1913 Wilson, D. C., 16 Ashley Terrace, Alloa
1910 Wilson, James L., Muircot Farm, Tillicoultry
1902 Wilson, John C., Tulliallan Castle, Kincardine-on-Forth
1896 Wilson, John E., Burnside, Alva
1907 Wilson, William, Ellaslea, Dollar
1914 Young, J. P., Dollar
1889 Younger, James, Arns Brae House, Alloa

DUMBARTON.

1892 Allan, A. Y., Aitkenbar, Dumbarton
1906 Baird, Montagu William, of Keppoch, Cardross
1897 Bauchop, John, Millburn Farm, Alexandria
1897 Begg, Malcolm, Shemore, Luss
1904 Burns, Alan, of Cumbernauld, Cumbernauld
1900 Cadzow, James, Gavinburn, Old Kilpatrick
1906 Cameron, Charles Alex., Torloisque, Drumchapel, Glasgow
1876 Campbell, Sir Archibald S. L., of Succoth, Bart., Garscube, by Glasgow

Admitted
1888 Campbell, J. Adair, Broomley, Alexandria, N.B.
1889 Campbell, William Middleton, of Colgrain, Helensburgh (23 Rood Lane, London)
1899 Chrystal, William J., of Auchendennan, Arden, Dumbartonshire
1905 Colquhoun, Archibald G. Campbell, Garscadden, Drumchapel
1895 Davie, William, jun., Main Street, Alexandria, N.B.
1868 Douglas, Archibald C., of Mains, Milngavie
1912 Douglas, John, Braes of Yetts, Kirkintilloch
1881 Duncan, Thomas, Dullatur
1913 Ewing, Humphrey Crum, of Strathleven, Dumbarton (Nevis, North Berwick)
1896 Fergusson-Buchanan, Colonel G. J., of Auchentorlie, Bowling
1880 Findlay, R. E., of Boturich, Balloch
1897 Fleming, Alexander, Drumkinnon, Alexandria, N.B.
1911 Gilmour, Allan (of Glencassley, Sutherland), Woodbank, Alexandria, N.B.
1881 Gilmour, William E., Woodbank, Alexandria
1896 Gray, James, Commercial Bank House, Kirkintilloch
1909 Hamilton, Miss, Cochno, Duntocher
1919 Hamilton, Andrew, Kessington, Bearsden
1909 Hamilton, C. A., Cochno, Duntocher
1919 Hamilton, John Kessington, Bearsden
1902 Hay, John, Easter Dullatur House, Dullatur
1862 Hendrie, John, *last known address*, Glenbank House, Lenzie
1918 Howie, Robert, Drumfork Farm, Helensburgh
1878 Ker, T. Ripley, of Dougalston, Milngavie
1899 Kerr, Thomas B. B., Hopetoun, Bearsden
1899 Kippen, William James, of Westerton, Balloch
1896 Lawrie, John M., Dumbuck Farm, Bowling, Dumbartonshire
1919 Leckie, John, Easter Shirva, Twechar, Dumbartonshire
1905 Lumsden, James Robert, of Arden, Dumbartonshire
1892 Macfarlan, Coll Jas. Turner, Stronafyne, Arrochar
1892 Macfarlan, Parlan, Faslane, Gareloch, Helensburgh
1912 M'Farlane, Robert, Tullich, Arrochar
1865 Mackenzie, John, Willow Burn, Clynder
1889 Mackenzie, Robert, of Caldarvan, Balloch
1897 Mackenzie, Colonel Robert C., C.B., D.L., of Edenbarnet, Duntocher
1909 M'Naught, Archibald, Myrtle House, Alexandria, N.B.
1883 Murray, David, LL.D., Moore Park, Cardross
1881 Park, Alexander, Ingleside, Lenzie
1916 Patterson, John T., Marlefield, Helensburgh
1883 Rankin, Robert, Bodenheath, Condorrat, Glasgow
1894 Russell, William, Ard-Luss, Helensburgh
1907 Scott, Crawford A., Estate Office, Bearsden
1897 Snodgrass, James, Millig, Helensburgh
1906 Stewart, W., Milton, Duntocher
1913 Watt, John, Lenzie Mill, Cumbernauld

Admitted
1894 Weir, James, Woodilee Farm, Lenzie—*Free Life Member*
1882 Whitelaw, Alexander, of Gartshore, Kirkintilloch
1897 Young, James, Springbank, Kirkintilloch
1905 Yuill, Thomas, Wester Gallowhill, Lenzie

PERTH

(Stirling Show Division).

1900 Ancaster, Earl of, Drummond Castle, Crieff
1883 Anderson, A. H., Kippendavie Estates Offices, Dunblane
1913 Anderson, Thomas L., Damside, Auchterarder
1903 Barty, Alexander Boyd, LL.B., Solicitor, Dunblane
1904 Barty, James, LL.B., Solicitor, Dunblane
1919 Bell, John Cameron, Calziebohalzie, Doune
1883 Blackett, J. S., Inverard, Aberfoyle
1899 Bryce, William, West Cambusdrennie, Stirling
1919 Brydie, Alexander, Lurg, Muthill
1906 Cairns, James, Coulshill, Auchterarder
1900 Cairns, William, of Dalchruin, Crieff
1913 Cairns, William, Glenfinlas, Callander
1900 Cameron, Duncan, Bow, Dunblane
1901 Cameron, R. W. G., Drumharvie, Auchterarder
1896 Campbell, James, Tullich, Killin
1900 Campbell, Samuel, Locherlour, Crieff
1909 Carmichael, William, Butcher, Dunblane
1880 Carnegie, James, of Stronvar, Balquhidder
1872 Carrick, T. A., Easter Cambusdrennie, Stirling
1881 Christie, Gilbert, Auchlyne, Luib
1915 Comrie, Peter, Drummie Farm, Crieff
1898 Corry, R. P., *last known address*, Ardveich, Lochearnhead
1909 Crabbie, Miss Ada M., Blairhoyle, Ruskie, Perthshire
1880 Craig, William, Corriemuckloch, Amulree, Dunkeld—*Free Life Member*
1919 Cullens, John, Lorne Villa, Bridge of Allan
1894 Dempster, John, Estates Office, Gartmore, Perthshire
1864 Dewar, A., Arnprior, Port of Menteith
1896 Dewar, Peter, Arnprior, Port of Menteith
1894 Dick, James, Ballinton, Thornhill
1909 Dickie, David, Newbigging, Fowlis Wester, Crieff
1913 Dickson, William Collins, Glassingall, Dunblane
1912 Dron, John, Esselmont, Crieff
1899 Dron, W. A., Crieffvechter, Crieff
1905 Drummond, Colonel Arthur Hay, of Cromlix, Dunblane
1905 Duncan, James, Cultcheldoch, Muthill
1900 Duncan, John L., Laurelbank, Blackford
1907 Dundas, David J. W., Craigarnhall, Bridge of Allan
1915 Elder, George, Wester Cambushinnie, Kinbuck

Admitted
1900 Ewing, George T., Pitkellony, Muthill
1916 Fairweather, Robert W., Factor, Blair Drummond
1903 Ferguson, Alexander, Lundie Farm, Doune
1903 Ferguson, John, Glenartney Forest, Comrie
1909 Finlayson, George W., Kirkton, Culross
1911 Finlayson, Malcolm, Solicitor, Crieff
1902 Fisher, Robert S., Balimore, Balquhidder
1891 Fleming, James, Easter Coul, Auchterarder
1914 Forbes, John, Severie, Doune
1909 Forrest, Alexander, Tomaknock, Crieff
1909 Fulton, John M., Mains of Boquhapple, Thornhill
1914 Galloway, James Norman, Keilator, Crianlarich
1900 Galloway, William, Dalvey, Callander—*Free Life Member*
1896 Gardiner, James, M.P., Dargill, Crieff
1904 Gardiner, William, Eden Cottage, Auchterarder
1910 Gibson, Wilfred Lawson, Balhaldie House, Dunblane
1905 Gilmour, John, General Merchant, Blackford
1900 Graham, George, Faraway, Kippen Station
1897 Grahame, A. M. B., Arntomy, Port of Menteith
1897 Graham-Stirling, Major C. Home, of Strowan, Crieff
1910 Grieve, Robert, Bridge of Allan
1901 Henderson, James W., Clarkton Farm, Doune
1895 Holmes, Robert K., Netherton, Doune, Perthshire
1919 Hood, William Walker, Invergeldie, Comrie
1919 Kerr, John, Abbey Farm, Madderty, Crieff
1919 King, Walter, Airthrey Kerse, Bridge of Allan
1907 Lennox, James, Redhills, Balgowan, Crieff
1907 Lennox, William, Kirkton, Auchterarder
1915 Lithgow, John, The Knowe, Dunblane
1900 Lyon, William, Margbeg, Ardeonaig, Killin
1913 Lumsden, Alexander Mather, County Buildings, Dunblane
1899 Lumsden, Robert Oswald, Huntingtower, Perth
1918 Lunn, William Holdsworth, Allan Water Hotel, Bridge of Allan
1907 M'Ara, Robert, Mains of Callander, Crieff
1914 M'Cosh, James Manson, Mailerbeg, Glenartney, Comrie
1900 M'Cowan, James, Ashentree, Blairdrummond
1896 M'Diarmid, James, Dunrachan, Muthill
1902 M'Donald, John, Nether Shannochill, Gartmore Station
1897 MacEwen, William, Mains of Boquhapple, Thornhill, Perthshire
1897 Macfarlane, Andrew, Chalmerston, Stirling
1915 M'Farlane, Andrew, Netherton, Blackford, Perthshire
1891 Macfarlane, Charles, East Brackland, Callander
1896 Macfarlane, Duncan, M.R.C.V.S., Doune
1906 M'Farlane, George, Balimore, Balquhidder
1900 M'Feat, Robert, Offers Farm, Gargunnock
1909 M'Ildowie, James, Easterton, Doune

Admitted
1914 M'Innes, Matthew, Isla House, Crieff
1909 MacIntosh, D., West Mains of Colquhalzie, Machany
1899 M'Intyre, Peter, Littleport, St Fillans
1900 M'Intyre, Peter, Tighnablair, Comrie
1910 Mackenzie, James, Dunblane Hotel, Dunblane
1909 Mackenzie, James, Cambushinnie, Dunblane
1896 M'Laren, A., Kingston, Doune Road, Dunblane
1909 M'Laren, Donald, Bracklinn, Callander
1906 M'Laren, Rev. John, M.A., Tulliallan Manse, Kincardine-on-Forth
1909 M'Laren, John, West Third, Gartmore
1888 M'Laren, W. D., Drummore, Doune
1919 M'Naughton, Alastair, Inverlochlarig, Balquhidder, R.S.O.
1871 M'Naughton, John, Inverlochlarig, Balquhidder, R.S.O.
1879 M'Naughton, Robert, of Cowden, Comrie
1899 M'Nee, John, Colony Farm, Crieff
1903 Marshall, Hugh, Stirling Arms Hotel, Dunblane
1872 Marshall, W. H., of Callander (25 Heriot Row, Edinburgh)
1919 Meikle, John, Anchorscross, Dunblane
1893 Millar, John M., Keir Mills, Dunblane
1887 Millar, Robert, *last known address*, Blair Castle, Culross
1912 Miller, James, Lowbank, Auchterarder
1900 Mitchell, James P., Glenmane, Callander
1900 Mitchell, John, Greenyards, Dunblane
1891 Mitchell, William, Blackdub, Stirling
1902 Moir, William, Netherton, Thornhill, Stirling
1900 Monteath, Robert, Biggs, Blackford
1882 Moubray, John James, of Naemoor, Rumbling Bridge
1898 Muirhead, John, Briarlands, Blairdrummond
1908 Murray, John, Ivybank, Dunblane
1862 Murray, Sir Patrick Keith, of Ochtertyre, Bart., Crieff
1894 Newbigging, Alexander, of Dalchonzie, Comrie
1892 Pagan, John S., Woodlea, Callander
1900 Paterson, Alexander, Hill of Drip, Stirling
1909 Paterson, George, Watston, Doune
1890 Paterson, James, Burnbank, Blair Drummond, Stirling
1882 Paterson, John, Kirkton, Tyndrum
1892 Paterson, Robert, Hill of Drip, Stirling
1909 Pollock, William, Topfold, Blackford, Perthshire
1914 Rankin, Captain Lewis D., Lochlane, Crieff
1900 Reid, Andrew T., Auchterarder House, Auchterarder
1913 Richardson, David, Hutcheson, Dunblane
1910 Richmond, James, Kippenross House, Dunblane
1909 Ritchie, Alexander, Cardross Estate Office, Port of Menteith
1909 Robertson, James, County Buildings, Dunblane
1905 Robertson, Robert, Mill of Drummond, Muthill
1919 Robertson, William, Park of Keir, Dunblane
1889 Rodger, James, Keir Estates Office, Dunblane
1896 Rogerson, James P., Fendoch, Crieff
1883 Rollo, Lord, Duncrub House, Dunning

Admitted
1900 Ross, Charles D., 14 High Street, Crieff
1896 Rowat, Robert, Swanfield, Crieff
1913 Roy, William, St Ives, Crieff
1905 Scott, George, Gerrichrew, Comrie
1894 Scott, William, Upper Lanrick, Doune
1902 Scrimgeour, John, Doune Lodge, Doune
1890 Sharp, George R., Middleton House, Blackford
1881 Sharp, James R., Viewfield, Blackford
1900 Sharp, Thomas M., Bardrill, Blackford
1909 Shaw, John, Middleton of Culdees, Muthill
1918 Smith, James Parker, Engineer, Denehollow, Dunblane
1870 Speir, R. T. N., Culdees Castle, Muthill
1875 Stark, M. C., Westerton Farm, Doune
1900 Stewart, Alexander, Corscaplie, Dunblane
1904 Stewart, D. Y., Drumlochy, Blackford
1895 Stewart, John, Bochastle, Callander
1889 Stirling, General Arch., of Keir, Dunblane
1900 Stirling, James, Dykedale, Dunblane
1903 Stirling, James, Kippendavie Mains, Dunblane
1909 Stirling, James S., Knockhill, Bridge of Allan
1900 Stirling, Major John Alex., of Kippendavie, Dunblane
1909 Strang, William, Kintocher, Crieff
1910 Thomas, Robert, Littledene, Dunblane
1910 Tod, William P., Glassingall, Dunblane
1909 Tulloch, Charles O., Ardochlea, Perth Road, Dunblane
1904 Turner, Joseph, of Greenhill, Braco
1900 Walker, William R., Tirarthur, Killin
1913 Waters, Mrs Marian, Glenample, Lochearnhead
1919 Watson, Straith, Rottearns Mills, Greenloaning, Braco
1900 Watt, John, Burnside of Balhaldie, Braco, Perthshire
1914 Willis, Mrs, Kiltane Poultry Farm, Dunblane
1899 Willison, Campbell, Acharn, Killin
1900 Willison, Douglas, Acharn, Killin
1915 Wilson, John F., Pittentian, Crieff
1905 Wilson, Peter, Lawhill, Auchterarder
1909 Wilson, William, Mains of Balhaldie, Braco
1914 Wood, William, Farmton, Machany, Crieff
1909 Wylie, James, Stockbridge, Dunblane
1905 Young, David, Barbush Farm, Dunblane
1904 Young, David, Hilton of Gask, Auchterarder
1894 Young, Robert, Charlesfield Lodge, Gask Auchterarder

STIRLING.

1905 Adam, James, Muir Park, Denny
1907 Aikman, Charles, Chartershall Farm, Stirling
1900 Aitken, Thomas, The Grove, St Ninians, Stirling
1915 Aitkenhead, David M., Roughlands, Carron
1901 Aitkenhead, Walter, Meadowbank, Polmont
1910 Anderson, James, Broadleys, Stirling
1910 Archibald, William, Muiredge, Lennoxtown
1915 Arding, Mrs Florence M., Arngibbon, Port of Menteith
1907 Baird, John Calderwood, Birchfield, Falkirk

Admitted
1900 Ballingall, David, 16 Park Terrace, Stirling
1900 Barns-Graham, Allan, of Craigallian, Milngavie
1906 Bartholomew, James, Glenorchard, Torrance
1909 Bean, Alexander, jun., Sheriffmuirlands, Causewayhead, Stirling
1909 Binnie, Robert, Plean, Bannockburn
1899 Blackburn, Colonel Peter, of Killearn, Killearn House, Dumgoyne
1886 Bolton, Edwin, of West Plean, Bannockburn
1919 Bowie, James, jun., Whitefauld, Torrance
1893 Boyle, A. H., *last known address*, Banknock House, Castlecary
1905 Brown, Andrew, Knowhead, Kippen Station
1888 Brown, Charles, Kerse Estate Office, Falkirk
1900 Brown, John, Dalderse, Falkirk
1905 Brown, John, 14 Port Street, Stirling
1905 Brown, Robert, Waukmilton Farm, Linlithgow
1903 Brown, William, Vellore, Polmont
1919 Bryce, Thomas K., Westwood, Stirling
1897 Buchan, Robert, Dalgrain, Falkirk
1897 Buchanan, Andrew C., Whitehouse, Stirling
1909 Buchanan, Charles A., Deroran, Stirling
1890 Buchanan, John, Inverallan House, Bridge of Allan
1882 Buntine, J. R., Torbrex House, Stirling
1909 Carrick, William, The Baad, Stirling
1900 Carswell, John, Graham Road, Grahamston, Falkirk
1899 Chapman, William, Bank of Scotland, Denny
1919 Christie, Alexander, Dalfoil, Balfron, Stirling
1873 Christie, James, Coxethill, St Ninians
1900 Clark, Alexander, Bonnyfield, Bonnybridge
1909 Clark, John, Hardlands, Bothkennar, Falkirk
1894 Clarkson, Robert, Avondale, Polmont
1914 Cowan, John, Broomridge, St Ninians, Stirling
1899 Crawford, Ewing R., of Auchentroig, Buchlyvie
1919 Currie, William, Nelson Place, Stirling
1915 Dando, Maurice, Arngibbon, Port of Menteith
1900 Dewar, Andrew, 8 Victoria Place, Stirling
1900 Dewar, John W., King's Park, Stirling
1899 Dewar, Peter, Kildean, Stirling
1908 Donaldson, W. Betts, of Auchineden, Blanefield
1908 Dougan, Andrew, 11 Williamfield Avenue, Stirling
1911 Doull, Donald, M.A., A.R.C.Sc., 7 Station Road, Cambus, Stirling—*Free Life Member*
1906 Downie, Robert, Knock O'Ronald, Gargunnock
1890 Drummond, James W., Seed and Nursery Establishment, Stirling
1908 Drysdale, John, Dundas School, Grangemouth
1918 Dunn, Andrew, Duncarron, Denny, Stirling
1881 Edmond, John, of Gallamuir, Bannockburn
1889 EDMONSTONE, Sir Archibald, of Duntreath, Bart., Duntreath Castle, Strathblane
1862 ERSKINE, Sir H. D., of Cardross, Stirling
1882 EWING, Sir A. E. Orr, of Ballikinrain, Bart. (7 Hereford Gardens, London, W.)

Admitted
1918 Farquhar, John James, 1 Park Terrace, Stirling
1897 Finlayson, William, Throsk, Stirling
1919 Fotheringham, William, West Drip, Stirling
1915 Forbes, Charles William, J.P., D.L., of Callendar, Callendar House, Falkirk
1893 Gall, William R., *last known address*, Stirling
1914 Gilchrist, William, Holdfletts Farm, Grangemouth
1897 Gillies, Neill, The Clydesdale Bank, Ltd., Stirling
1919 Glen, James, Ashfield, Park Place, Stirling
1894 Graham, James D., Airthrey Castle, Bridge of Allan
1914 Gray, Andrew, Kersie Mains, Stirling
1891 Gray, James, Birkenwood, Gargunnock
1901 Gray, John (Gray & Co., Grain Merchants), Stirling
1919 Gray, Peter, 10 Albert Place, Stirling
1913 Gray, Robert, Binniehill Farm, Slamannan
1910 Greig, Andrew S., 42 Broad Street, Stirling
1897 Grigor, John, Factor, Sauchie Burn, Stirling
1914 Grindlay, William, Knowhead Farm, Dennyloanhead
1897 Guthrie, D. W., Airthrey Croft, Bridge of Allan
1905 Haldane, W. A. D., Iresdell, Killearn
1873 Henderson, A. W., Bridge of Allan
1900 Hetherington, William, 27 Port Street, Stirling
1911 Hill, Robert, Claylands Farm, Kippen
1910 Hope, Thomas, East Green Yards Farm, Bannockburn
1898 Horsbrugh, Charles E., Blairquhosh, Blanefield
1881 Jaffrey, William, Easter Offerance, Buchlyvie
1917 Johnston, John, Carbrook Mains, Larbert
1915 Johnston, Thomas, Standalane, Falkirk
1909 Kerr, James, Easter Culmore, Kippen Station
1915 Kerr, William, Bandeath, Stirling
1868 King, C. M., Antermony House, Milton of Campsie
1915 King, James, Old Keir, Bridge of Allan
1915 Laing, William, Cowiehall, Bannockburn
1909 Laird, John, Auchenreoch Mains, Milton of Campsie
1909 Lang, John, Culbeg, Gargunnock
1909 Lang, Robert, Fleuchams, Gargunnock
1900 Latta, Robert M., Dougalston, Milngavie
1880 Learmonth, George G., Mount Pleasant House, Pleasance Gardens, Falkirk
1901 Learmonth, James, Darnley House, Stirling
1899 Leckie, John, Inchwood, Milton of Campsie
1915 Logan, John, Powis Mains, Stirling
1891 Lowe, P. R., Abbotsford, Bridge of Allan
1900 Macadam, Archibald, Blairoer, Drymen Station
1909 M'Callum, Daniel, 10 Williamfield Avenue, Stirling
1899 M'Diarmid, J. A., Glenboig, Balfron
1914 M'Dougall, A. P., High Craigton, Milngavie
1909 M'Ewen, Daniel, Port Street, Stirling
1909 M'Ewen, Duncan, Sunnylaw, Bridge of Allan
1909 M'Farlan, Robert, Springkerse, Stirling

Admitted
1891 Macfarlane, James, of Oxhill, Buchlyvie
1886 Macfarlane, Robert C., Craigforth Mills, Stirling
1919 M'Farlane, Thomas, Viewforth, Bannockburn
1918 M'Kenzie, William, 17 Forth Crescent, Stirling
1891 M'Laren, James, Cornton, Stirling
1888 M'Lean, Donald, *last known address*, Ashtrees, Bridge of Allan
1903 Maclean, Donald, Peatriggend House, Slamannan
1908 M'Niven, John, Libertas, 9 Heathfield Drive, Milngavie
1913 Malcolm, James F., Dunmore, Larbert
1913 Malcolm, John, 6 Coburg Avenue, Stirling
1913 Malcolm, Maurice, Carbeth Home Farm, Balfron Station
1909 Malcolm, William Maurice, Dunmore, Larbert
1880 Malcolm, W. T., Dunmore, Larbert (Whittingehame, Prestonkirk)
1909 Marshall, James, Overtown, Grangemouth
1913 Marshall, John, Laverockhall, Torrance
1909 Matthew, William, Auchenbowie Mains, Bannockburn
1914 Meikle, Robert, Bearcrofts, Grangemouth
1915 Meikle, William, Polmont Hill, Polmont
1882 Melville, John H., Eriden, Falkirk
1912 Miller, Robert, Stirlingshire Poultry Farm, The Boards, Denny
1909 Mitchell, Alexr., Haugh of Cambus, Blackgrange
1918 Mitchell, Donald, Easter Ross, Gargunnock
1885 Mitchell, James, Bannockburn House, Bannockburn
1905 Mitchell, Stephen, of Boquhan, Kippen
1881 Moir, Alexander, Nether Carse, Gargunnock
1919 Monach, James, Craignorton, Buchlyvie, Stirling
1901 Monteath, John, Wright Park, Kippen
1876*†Montrose, The Duke of, K.T., Buchanan Castle, Drymen
1912 More, James, Woodyett, Gargunnock
1919 More, John, Gogar Mains, Stirling
1919 More, William, Fourmerk Farm, Kippen Station
1903 Morton, David L., King Street, Stirling
1908 Murray, Major A. B., of Polmaise, Stirling
1908 Murray, J. W., Catter House, Drymen
1908 Murray, R. A., of Pirniehall, Drymen Station
1895 Murray, W. Watson, Catter House, Drymen
1919 Neilson, Thomas, Clayfaulds, Balfron, Stirling
1905 Orr, Andrew, Coldrach, Drymen
1913 Orr, George, Boagston, Avonbridge
1915 Oswald, John, Northfield, Denny
1917 Paterson, George, Wester Frew, Kippen Station
1909 Paul, David, Haughs of Airth, Bothkennar, Larbert
1895 Peareth, John Lennox, Lennox Castle, Campsie Glen, Stirlingshire
1909 Peat, William, Manor Farm, Stirling
1887 Pullar, Edmund, Westerton House, Bridge of Allan
1908 Reid, Thomas L., Royal Bank of Scotland, Stirling
1899 Rennie, William, Parkhead, Slamannan
1913 Reynard, James Napier, Manuel House, Linlithgow, Stirlingshire

Admitted
1910 Reynard, John Napier, Manuel House, Linlithgow, Stirlingshire
1909 Risk, James, Gowstane, Buchlyvie
1900 Risk, John, Carlton, Stirling
1900 Risk, John, Culmore, Kippen, Stirling
1909 Robb, Henry, 11 Barnton Street, Stirling
1901 Robertson, Alexander, Estate Office, Polmaise, Stirling
1908 Robertson, Dan., The Brewery, Falkirk
1909 Robertson, John, Borrowmeadow, Stirling
1910 Rowan, George Francis Connal, of Meiklewood, Stirling
1914 Roy, John, Reddoch, Grangemouth
1873 Sands, James, Greenfoot, Gargunnock
1884 Scott, Thomas, South Woodend, Castlecary Station, Glasgow
1882 Sheppard, Rev. H. A. G., Rednock House, Ruskie, by Stirling
1915 Sim, Ernest James, Airthrey Estate Office, Bridge of Allan
1913 Smith, Adam, Lochlands, Larbert
1899 Smith, Andrew, Spittalmyre, 19 Wallace Street, Stirling
1893 Smith, James Kemp (Messrs Kemp & Nicholson), Stirling
1915 Smith, John C., Cockspow Farm, Stirling
1919 Smith, John Paterson, J.P., Smithfield, Larbert
1909 Steel, John, Westerton of Cowie Farm, Bannockburn
1902 Steel-Maitland, Sir A. D., of Sauchie, M.P., Stirling (72 Cadogan Square, London, S.W.)
1882 Stevenson, John, Gateside, Kilsyth
1919 Stewart, James, Cashley, Buchlyvie, Stirling
1909 Stewart, James, Hill of Kinnaird, Larbert
1919 Stewart, Robert Russell, Craigielea, Milngavie
1915 Stirling, James, Moss Grove, Bridge of Allan
1905 Stirling, Commander G. H. Millar, of Craigbarnet, R.N., Campsie Glen

Admitted
1909 Strang, William, Avonbank, Polmont
1915 Tait, W. W., Bowtrees, Falkirk
1907 Taylor, Joseph B., Woodend Farm, Kilsyth
1879 Thomson, James, Coach Works, Stirling
1906 Thomson, John James, Myrehead, Linlithgow
1897 Thomson, Robert, Queenshaugh, Stirling
1919 Thomson, Thomas, Manorneuk, Stirling
1904 Thornley, Thomas, Camelon Works, Falkirk
1915 Tod, John, Netherby, Stirling
1894 Torrance, T. A., *last known address*, Ashbank Poultry Yards, Denny
1875 Ure, George R., Hope Park, Bonnybridge
1919 Walker, John, Drum of Kinnaird, Larbert
1898 Wallace, T. Douglas, Callendar Estate Office, Falkirk
1903 Walls, James, Muirton, Stirling
1873 Walls, Robert, Kerse Mills, Stirling
1909 Wardlaw, A. M., Solicitor, Bridge of Allan
1871 Waugh, Allan, Craigbank, Avonbridge
1907 Waugh, James, Avon Grain Mills, Avonbridge
1919 Weir, Archibald, Pleanbank, Plean, Stirling
1881 Wilson, David, of Carbeth, D.Sc., Killearn—*Treasurer of the Society*
1881 Wilson, Captain William, 4 Park Place, Stirling
1891 Wilson, William Ralph, Hill Park, Bannockburn
1909 Young, Alexander, Craigview, Causewayhead, Stirling
1913 Young, R., Parkhall Home Farm, Polmont Station
1879 Younger, Sir George, of Leckie, Bart., M.P., Gargunnock
1896 Yuille, Andrew B., Bellevue, Bridge of Allan

Number of Members, 495.

4.—EDINBURGH DIVISION.

EMBRACING THE

COUNTIES OF EDINBURGH, EAST LOTHIAN, AND WEST LOTHIAN.

EDINBURGH.

Admitted
1901 Ainslie, James, 38 Murrayfield Avenue
1899 Ainslie, Robert, Conservative Club, Princes Street
1899 Aitken, Alfred N. G., S.S.C., 37 Queen Street
1914 Aiton, R. Scott, Livingston Manse, Mid-Calder
1908 Alexander, Wm., Prestonhall Estate Office, Ford
1908 Alison, John, Buccleuch Street, Dalkeith
1899 Alison, John P., D'Arcy, Dalkeith
1899 Alison, Robert Barclay, W.S., 11 South Learmonth Gardens
1906 Allan, John, 28 Constitution Street, Leith
1892 Allan, Thomas, Clifton, Corstorphine
1899 Allan, William, Erlington, Kaimes Road, Corstorphine
1893 Allison, James, Redheughs, Corstorphine
1899 Allison, R., Campend, Dalkeith
1918 Allison, William, Campend, Dalkeith
1915 Allison, William, Redheughs, Corstorphine
1914 Alston, David, Heriot Mill, Heriot
1902 Amour, James, Cramond Bridge
1859 Anderson, G. B., Hillfoot, Corstorphine Road, Murrayfield
1913 Anderson, James, East Langton, Mid-Calder
1884 Anderson, J. R., W.S., 52 Palmerston Place
1884 Anderson, R. K., 377 High Street
1881 Anderson, W. M., 34 Murrayfield Road
1899 Anderson, W. W., Colzium, Kirknewton
1900 Archibald, Adam, Overshiels, Stow
1900 Armstrong, John, 44 Balgreen Avenue, Murrayfield
1887 Armstrong, W. J., 57 Manor Place
1900 Arnott, P. R., *last known address*, 10 Murrayfield Road
1899 Ash, P. C., *last known address*, Alderstone, West Calder
1894 Babington, William, W.S., 110 George Street
1902 Baillie, John, Rosebank, Currie
1914 Baillie, John D. S., Ransfield, Ratho
1887 Bain, W. P. C., 6 Wester Coates Gardens
1894 Baird, Archibald, M.R.C.V.S., 40 York Place
1879 Balfour, Professor I. B., Inverleith House
1907 Ballach, Alex., Implement Works, Manderston Street, Leith
1895 Barber, William, 32 Dick Place
1901 Bathgate, William Thomson, Middleton Lime Works, Gorebridge

Admitted
1878 Beattie, W. J. P., *last known address*, Edinburgh Hydro., Slateford
1882 Belfrage, A. J., Durham House, Portobello
1895 Bell, David, Mervue, Ferry Road
1883 Bertram, Hugh, *last known address*, Edinburgh
1907 Binnie, Alex., 1 Orwell Terrace
1914 Bishop, James, Blackhall, West Calder
1899 Blackwood, George W., Gogar Mount, Ratho Station
1899 Blackwood, James Hugh, Gogar Mount, Ratho Station (7 Talbot Square, London, W.)
1900 Blair, Alexander, 9 Wemyss Place
1915 Blyth, George P., Craigentinny, Edinburgh
1907 Borthwick, A. W., 46 George Square
1858 Borthwick, W. H., Crookston House, Heriot
1911 Bowden, William, 63 Ferry Road, Leith
1919 Boyd, Archibald Nimmo, Broomhouse, Corstorphine
1905 Boyd, Thomas, 36 Salamander Street, Leith
1911 Bradley, O. Charnock, M.R.C.V.S., M.D., D.Sc., Principal Royal (Dick) Veterinary College, Summerhall Square
1902 Brash, James, The Bungalow, Kirk Road, Corstorphine
1913 Brockley, Robert J. M., Gourlaw, Rosewell
1909 Brodie, John, Cross Keys Hotel, Dalkeith
1863 Brown, Adam, 2 Arboretum Road
1915 Brown, Hugh R., Stoneyhill, Musselburgh
1907 Brown, John, Leawood, Corstorphine
1892 Brown, Robert, Selms Farm, Kirknewton
1882 Brown, William, Currievale, Currie
1885 Brownlee, George, Longthorn, Dalkeith
1914 Bruce, Patrick Chalmers, Baddensgill, West Linton (Kinleith, Currie)
1900 Bruce, William, B.Sc., Edinburgh and East of Scotland College of Agriculture, 13 George Square — *Free Life Member*
1884 Brydon, John, 5 Cobden Crescent
1888*† Buccleuch and Queensberry, The Duke of, Dalkeith House, Dalkeith
1902 Buchan, Andrew, East Ingliston, Ratho Station
1914 Buchan, John, Corstorphine Bank, Corstorphine
1902 Buchan, Robert Marshall, Bonnington Farm, Wilkieston
1892 Buchanan, Charles, Factor, Penicuik

Admitted
1899 Buchanan, James R., Adambrae, Mid-Calder
1894 Buchanan, Robert, Livingston Mill, Livingston, Mid-Calder
1919 Burnett, George, 29 Mansionhouse Road
1911 Burns, Robert Hutchison, Hatton Mains, Kirknewton
1904 Buttar, Alexander, Inland Revenue Valuation Dept., 45 Hanover Street
1906 Byres, William, Baadsmill, West Calder
1912 Caie, J. M., M.A., B.Sc., 1 St Alban's Road
1891 Cairns, T. M., *last known address*, Scotsman Buildings, Edinburgh
1887 Cairns, Wm., 4 Polwarth Terrace
1905 Calder, James Charles, 26 Royal Terrace
1915 Callander, A. D. (Board of Agriculture for Scotland), 29 St Andrew Square
1887 Callander, Henry, of Preston Hall, Dalkeith
1913 Cameron, Alex. M., B.Sc., Beechleigh, Lasswade
1912 Campbell, Archibald, Board of Agriculture for Scotland, 29 St Andrew Square
1889 Campbell, George, W.S., 21 Alva Street
1875† Campbell, Sir James, LL.D., 14 Douglas Crescent
1895 Campbell, James, Illieston, Mid-Calder
1905 Campbell, P. P., 20 Rutland Square
1890 Campbell, P. W., W.S., 25 Ainslie Place
1904 Campbell, W. J., Merchiston Park
1904 Canch, T. R., 3 Greenbank Crescent
1889 Carfrae, George Somervel, C.E., 1 Erskine Place
1918 Carrie, George, 2 Ashley Terrace
1915 Chalmers, Charles, 65 Clerk Street
1907 Chalmers, W. Graham, 59 Colinton Road
1899 Chiene, Hall C., C.A., 3 Albyn Place
1881 Chirnside, John, *last known address*, 48 Albany Street, Edinburgh
1901 Christie, H. Duncan, 35 Mayfield Gardens
1916 Christie, H. Randolph, Felton Mains, Carnamah, Perth, Western Australia (35 Mayfield Gardens)
1899 Clark, John, S.S.C., 16 Drummond Place
1899 Clark, Thomas Bennet, C.A., 64 Queen Street
1905 Clark, William W., Blackhope, Heriot
1895 Clay, Alexander Thomson, W.S., 24 Charlotte Square
1905 Cleghorn, James, Craigour, Gilmerton
1894 Connell, Isaac, Secretary, Chamber of Agriculture, 18 Duke Street
1884 Cook, Charles, W.S., 61 Castle Street
1882 Cook, Sir Henry, W.S., 61 Castle Street
1892 Cook, James, Arniston, Gorebridge
1910 Cook, John, W.S., 61 Castle Street
1885 Cook, William Home, C.A., 42 Castle Street—*Auditor to the Society*
1910 Cowan, Alexander (Eastside), Valleyfield, Penicuik
1860 Cowan, C. W., of Loganhouse, Mortonhall, Liberton
1898 Cowan, David, 22 St Andrew Square
1914 Cowan, Francis, Wester Lea, Murrayfield
1899 Cowan, James, 2 Gilmour Road
1879 Cowan, John, W.S., 31 Charlotte Square
1879 Cowan, Sir John, 2 St Andrew Square
1906 Cowan, Kenneth, 14 Greenhill Place
1902 Cowper, John E. B., Gogar House, Corstorphine
1896 Crabbie, George, of Blairhoyle, 8 Rothesay Terrace
1877 Craig, Dr William, 71 Bruntsfield Place
1915 Craig, Hugh, Manager, Bonaly, Colinton

Admitted
1897 Craig, William Cumming, 9 Learmonth Terrace
1883 Cranston, Robert, 28 Lauriston Place
1894 Crichton, David, *last known address*, 89 Princes Street
1899 Croall, James Taylor, Castle Terrace
1899 Croall, Robert Douglas, Castle Terrace
1907 Crooke, John T., Little Ochiltree, Uphall
1900 Cross, Robert, 13 Moray Place
1911 Cruickshank, W. J. T., 26 Macdowall Road
1894 Cunningham, Lawrence, Thornbank, Juniper Green
1898 Cunyngham, Sir William Dick, of Prestonfield, Bart. (c/o Gillespie & Paterson, W.S., 31 Melville Street)
1915 Currie, Hugh K., City Farm, West Calder
1873 Dalziel, George, W.S., 66 Queen Street
1919 Darbey, Francis Lionel (Board of Agriculture for Scotland), 29 Arden Street
1904 Darling, Robert, Rosetta, Waverley Road, Dalkeith
1894 Davidson, Alexander, Bankhead House, Balerno
1912 Davidson, George Spence, Saughton Mains, Corstorphine
1877 Davidson, James I., Saughton Mains, Corstorphine
1919 Davidson, Lindsay Gordon (Board of Agriculture for Scotland), 13 Strathfillan Road
1912 Davidson, Thomas (A. Riddell & Co.), 5 Grassmarket
1919 Davidson, Thomas Wm., Bridgend, Craigmillar, Mid-Lothian
1894 Davidson, William, 24 Hallhead Road, Craigmillar Park
1888 Davidson, W. S., 69a George Street
1908 Denholm, A. Scott, 57 Bernard Street, Leith
1883 Dewar, John R. U., F.R.C.V.S., 18 Drummond Place
1907 Dick, Adam B., Shewington, Rosewell
1899 Dick, John, Parkhead, West Calder
1913 Dick, Robert, Turniemoon, West Calder
1893 Dick, Thomas, North Lodge, Harburn, West Calder
1884 Dickson, James, Damhead, Loanhead
1903 Dickson, Leonard W., 45 Manor Place
1878 Dickson, W. T., W.S., 11 Hill Street
1919 Dobbie, Joseph, S.S.C., 26 Charlotte Square, Edinburgh
1898 Dobbin, Leonard, Ph.D., 6 Wilton Road
1907 Dobson, William (Parkhall, Douglas), c/o Dobson Brothers, 74 Morningside Road
1907 Dobson, William, Kingsknowes, Colinton
1914 Donaldson, R. P., 138 Constitution Street, Leith
1868 Douglas, A. H. Johnstone, 9 Doune Terrace
1902 Douglas, Abram, Dalkeith Mills, Dalkeith
1907 Douglas, Loudon M., 29 West Savile Terrace
1911 Douglas, Thomas (W. J. Robertson & Co., Ltd.), Waverley Oil Works, Fountain Place
1881 Drysdale, A. L., 20 George Street
1891 Drysdale, John, 5 St Andrew Square
1902 Dudgeon, Miss Ada, 15 Grange Road
1895 Dudgeon, Alex. H., 15 Grange Road
1915 Dun, George P., Gilston, Heriot
1902 Duncan, John T. (Drummond Brothers), Central Station Buildings, Leith
1887 Dundas, Hon. Lord, 11 Drumsheugh Gardens

Admitted
1911 DUNDAS, Sir Henry, Bart., M.V.O., Polton House, Lasswade
1908 Dundas, Robt. William, 2 Rothesay Terrace
1880 Dundas, William J., C.S., 16 St Andrew Square
1877 DUNEDIN of Stenton, Lord, 7 Rothesay Terrace
1872 Dunlop, George, W.S., 20 Castle Street
1878 Dykes, James, Cuicken, Penicuik
1910 Dykes, John, Redside, Gorebridge
1904 Eaglesham, James, Crookston, Inveresk
1906 Elliot, Thomas, 103 Trinity Road, Leith
1906 Elliot, Walter, 103 Trinity Road, Leith
1903 Elliot, William Irving, Middletown, Stow
1898 ELPHINSTONE, Lord, Carberry Tower, Musselburgh
1913 Fagan, T. W., M.A., Edinburgh and East of Scotland College of Agriculture, 13 George Square
1916 Fairley, James, 83-91 Leith Street
1890 Farmer, A. Douglas, of Kinkell (New Club, Edinburgh)
1899 Findlay, Sir John R., 27 Drumsheugh Gardens
1890 Fisher, Thomas, Whitehill, Rosewell
1919 Fleming, Alexander, Pilmuir, Balerno
1911 Fleming, Charles, 7 Macdonald Road
1895 Fleming, Charles J. N., 28 Garscube Terrace, Murrayfield
1893 Fleming, John, Coates, Penicuik
1919 Fleming, Robert D., Pilmuir, Balerno
1919 Fleming, William, Pilmuir, Balerno
1896 Fletcher, Grant, 4 Forres Street
1905 Forbes, Alexander, 33 Spottiswoode Street
1878 Ford, G., Saughton Hall Mains, Gorgie
1871 Forgan, Andrew, 52 Claremont Street
1907 Forrest, James, Meadowhouse, Murrayfield
1915 Francis, P. A. (Board of Agriculture for Scotland), 29 St Andrew Square
1915 French, William, Blacksmith, Inveresk
1899 Fullarton, John, Mid-Kinleith, Currie
1918 Galloway, John G., 7 Stirling Road
1894 Gardner, Adam, Melville Grange, Gilmerton
1877 Gardner, William, Roddinglaw, Currie
1919 Garvie, Samuel (Board of Agriculture for Scotland), 29 St Andrew Square
1889 Gibson, Thos., East Merchiston Villa, 4 Colinton Road
1895 Gibson, Thomas R., Bainfield, 94 Polwarth Terrace
1901 Gifford, Thomas, The Briggs, Kirkliston
1896 Gilbert, T. Johnson, 15 Warriston Crescent
1914 Gilchrist, Thomas, Cauldcoats, Portobello
1899 Gillespie, Alexander L., 1 Denholm Green Avenue, Trinity
1899 Gillespie, William, 8 Craighall Terrace, Musselburgh
1904 Gillon, Andrew, 13 Royal Terrace
1890 Gilmour, General R. Gordon, C.V.O., C.B., D.S.O., of Craigmillar, The Inch, Liberton
1919 Gladstone, John, Edgelaw, Gorebridge
1896 Glendinning, Patrick B., 2 Douglas Crescent
1908 Gofton, Prof. Arthur, Veterinary Department, City of Edinburgh (17 Polwarth Grove)
1911 Gordon, John, M.A., B.Sc., *last known address*, 66 Falcon Avenue
1902 Graham, George W., *last known address*, 13 Woodhall Terrace, Juniper Green

Admitted
1905 Graham, James, Windlestrawlee Farm, Ferry Road, Edinburgh
1904 Graham, John (Mutter, Howey, & Co.), 24 Market Street
1915 Graham, Robert, Crosshouse, Milton Bridge
1910 Grant, Edward John Robertson, Tarndune, Colinton Road
1884 Gray, James, Harperigg, Kirknewton
1899 Gray, James L., Elginhaugh Mills, Dalkeith
1907 Gray, John R., Niddrie Mains, Craigmillar
1878 Gray, Robert Smith, Southfield, Duddingston
1899 Gray, William, Braehead, Cramond
1901 Green, Chas. Edward, of Gracemount, Liberton
1892 GREIG, Sir R. B., LL.D., M.C., Board of Agriculture for Scotland, 29 St Andrew Square—*Free Life Member*
1877 Greig, R. M., 9 Hermitage Drive
1889 Grey, John Edward, M.R.C.V.S., 20 Lauriston Place
1899 Grieve, William O., Kirklands, 4 Cluny Gardens
1907 Guest, Edward Graham, 5 Newbattle Terrace
1893 Guild, Alexander, W.S., 5 Rutland Square
1874 Guild, James L., 71 George Street
1877 Gulland, W. J., 3 Braid Crescent
1908 Gunn, David W., Craigcrook Farm, Blackhall
1899 Haldane, Francis G., W.S., 4 North Charlotte Street
1907 Hamilton, David Rae, 63 Cluny Gardens
1908 Hamilton, George, Newyearfield Farm, Mid-Calder
1919 Hamilton, James, Cockburn, Balerno
1900 Hamilton, James, Melville Home Farm, Lasswade
1905 Hamilton, James, Old Liston, Ratho
1915 Hamilton, John, Greenlaw Mains, Glencorse
1915 Hamilton, John, Whitecraig, Musselburgh
1919 Hamilton, Major J. A., Command Land Agent, Scottish Command, 63 Cockburn Street, Edinburgh
1906 Hamilton, William H., of Cairns, Kirknewton
1905 Harding-Edgar, George (of Linplum, Haddington), 9 George IV. Bridge
1878 Hare, Colonel, Calder Hall, Mid-Calder
1871 Harper, William, Sheriffhall Mains, Dalkeith
1893 Henderson, Allan M., 26 Rutland Square
1885 Henderson, George, 4 Corrennie Gardens
1914 Henderson, James, The Craigs, Mid-Calder
1876 Henderson, John Milne, C.A., 40 Leamington Terrace
1899 Henderson, Robert, Craigie, Cramond Bridge
1902 Herdman, John, Southwood, Murrayfield Road
1899 Herdman, Thomas A., Southside, Gorebridge
1903 Hill, Ernest G., c/o Macandrew, Murray, & Wright, W.S., 9 Albyn Place
1876 Hogg, Robert, 49 Falcon Avenue
1918 Hogg, Robert, potato merchant, Dalkeith
1880 Hogg, Thomas, Oxenford Mains, Dalkeith
1886 Honeyman, Thomas, Levenhall House, Musselburgh

Admitted
1907 Hood, James A., Midfield, Lasswade
1917 Hortor, T. Stirling, Dinwoodie, Davidson's Mains
1908 Howat, James, Harrysmuir, Mid-Calder
1907 Howden, John M., C.A., 8 York Place
1906 Hunter, David, 6 Mentone Gardens
1903 Hunter, Frank, W.S., 7 York Place
1908 Hunter, John, The Bow, Stow
1875 Hutchison, Thomas, Broomhills, Loanhead
1919 Hyslop, Birkett Andrew (Board of Agriculture for Scotland), 46 Great King Street
1869 Inglis, A. W., 30 Abercromby Place
1902 Inglis, William, Granton House, Edinburgh
1898 Irons, George Campbell, 19 Dundas Street
1903 Jack, Alexander, Brunstane Mills, Musselburgh
1907 Jack, Archibald G., Crichton Mains, Ford, Dalkeith
1919 Jack, George, Upper Dean Park, Balerno
1907 Jackson, Richard F., Cathpair, Stow
1919 Jamieson, W. Stamford (Board of Agriculture for Scotland), 42 Warrender Park Road
1894 JOHNSTON, Hon. Lord, 33 Moray Place
1884 Johnston, J. S., Inglewood, Corstorphine
1906 Johnstone, James, 3 Granton Square
1901 Keay, Dr John, Bangour, Uphall
1878 Kennedy, Captain J. B., *last known address*, 34 Murrayfield Road
1919 Kerr, Lieut. David Simpson, Springfield Mills, Leith
1888 Kerr, George, 6 St Colme Street
1913 Kerr, Hugh R., Springfield Mills, Leith
1919 Kerr, Lieut. Hugh Robert, Springfield Mills, Leith
1914 Kerr, John A. (Joseph Kerr & Sons), 12 William Street
1919 Kerr, John, jun., Yorkstone, Gorebridge
1919 Kerr, Captain William Simpson, Springfield Mills, Leith
1902 Kidd, Alexander, Nether Lennie, Cramond Bridge
1903 Kinnear, Norman Boyd, 12 Grosvenor Crescent
1902 Knoblauch, Louis, 74 Inverleith Place
1912 Laing, John, Whitehill, Wilkieston, Midcalder
1895 Lamont, James, 41 Comely Bank Road
1905 Lauder, Alexander, D.Sc., F.I.C., 13 George Square
1905 Lauder, Andrew S., West Mills, Colinton
1907 Lawrie, James, Loanhead Farm, Ford, Dalkeith
1872 Lawrie, John W., Beechwood, Dewarton, Gorebridge
1899 Lawrie, Thomas, Drylaw, Davidson's Mains
1915 Lawson, George A., 34 Garscube Terrace, Murrayfield
1863 Lees, Richard, 9 Braidburn Terrace
1907 Legget, R. Lindsay, 2 Ravelstone Terrace
1905 Lewis, John, Saughton Mills, Edinburgh
1914 Lindsay, Argyll, Clifton Hall, Ratho
1878 Lindsay, John V., 26 Murrayfield Avenue
1914 Lindsay, John Varrie, jun., 25 Murrayfield Avenue
1906 Lindsay, R., Sanitary Inspector, County Buildings
1914 Livingstone, Archibald M'D., 1 Rutland Square

Admitted
1898 Logan, Robt. John, 56 Palmerston Place
1899 Logan, William, Easter Kinleith, Currie
1898 LOTHIAN, Marquis of, Newbattle Abbey, Dalkeith
1919 Low, George, Surveyor (Board of Agriculture for Scotland), 29 St Andrew Square
1918 Lowe, David, Kirk Park, Musselburgh
1891 Lowe, W. D., W.S., 66 Queen Street
1902 Lownie, John, 57 Harrison Road
1918 M'Arthur, Andrew, Craigrowan, 7 Napier Road
1910 M'Callum, Alexander, M.A., LL.B., 13 George Square
1874 McCallum, A. I., 5 Greenhill Park
1882 M'Cowan, Alexander, 5 Barnton Gardens, Davidson's Mains
1908 M'Crostie, Hugh, 144 Newhaven Road, Leith
1915 Macdonald, D., Harlaw, Balerno
1919 M'Donald, Henry (Board of Agriculture for Scotland), 7 Morningside Terrace
1918 Macdonald, J., 2 Argyle Place
1914 Macdonald, James H. Stephens, 2 Garscube Terrace, Murrayfield
1899 M'Dougall, Andrew, Willow Bank, Corstorphine
1918 Macdougall, John, 21 Crawfurd Road
1911 MacDougall, R. Stewart, D.Sc., F.R.S.E., 9 Dryden Place—*Zoologist to the Society*
1878 M'Dowall, T. N., Remote, Ford, Mid-Lothian
1914 Macfarlane, Malcolm, 62 Dudley Avenue, Leith
1890 MacGibbon, John, Ardgowan, Levenhall, Musselburgh
1909 M'Ilwrick, T., 24 Downie Terrace, Murrayfield
1907 Mackenzie, Alexander, 19 Greenhill Gardens
1897 Mackenzie, Stewart, 6 Midmar Drive
1910 Mackenzie, William Lyon, 6 Melville Crescent
1899 Mackinlay, James, 89 Constitution Street, Leith
1873 Maclagan, R. C., M.D., 5 Coates Crescent
1910 M'Laren, Peter R., Architect and Surveyor, 34 St Andrew Square
1919 Maclean, Thomas Finlay (Board of Agriculture for Scotland), 5 Arden Street
1918 M'Lean, William Y., 14 Bonaly Road
1902 M'Lennan, George M., Springfield, Inveresk
1883 Macpherson, C. E. W., C.A., 6 North St David Street
1911 Macrae, Rev. Dun. M., 104 Craiglea Drive
1879 MacRitchie, David, 4 Archibald Place
1907 M'Turk, Alexander, M.R.C.V.S., Professor of Medicine, Royal (Dick) Veterinary College, Summerhall Square (11 Ladysmith Road)
1893 Madder, J. W., 20 Brunstane Road, Joppa
1915 Main, Alexander (Board of Agriculture for Scotland), 29 St Andrew Square
1896 Main, James, Corn Exchange Buildings, Gorgie
1908 Marshall, William, Humbie Farm, Kirknewton
1875 Martin, Donald T., Easterpark, Davidson's Mains
1903 Martin, John, Letham, Mid-Calder
1886 Massie, W. H., 1 Waterloo Place
1907 Mather, James, Ravelston Bank, Blackhall
1899 Mather, Matthew, Silverknowes, Davidson's Mains

Admitted
1907 Mather, Matthew, jun., Silverknowes, Davidson's Mains
1900 Mathison, William, of Shoestanes, Heriot
1899 Maxwell, David, 26 Rutland Street
1911 Meikle, Thomas, Hillend, Colinton
1886 Melville, G. F., 12 Moray Place
1907 Menzies, Alan L., W.S., Larch Grove, Balerno
1892 Menzies, John C., The Rowans, Colinton —*Free Life Member*
1885 Menzies, John G., *last known address*, 6 Grosvenor Crescent
1899 Mercer, George G., J.P., Southfield, Dalkeith
1892 Methuen, John, 21 Rutland Street
1899 Middleton, John, *last known address*, 42 George Street
1902 Millar, James, Pumpherston Farm, Mid-Calder
1913 Millar, Robert, Loquhariot, Gorebridge
1897 Millar, Thomas J., C.A., 30 York Place
1915 Miller, David, Coxiedean, Wilkieston
1906 Milne, James, 15 Hillview Terrace, Blackhall
1913 Milne, Wm. Robertson, W.S. (Tait & Crichton), 41 Northumberland Street
1909 Mitchell, Alexander, Rosebery, Gorebridge—*Free Life Member*
1885 Moncreiff, Hon. Jas. W., 6 Ainslie Place
1907 Moncur, James L., Oreti, 16 Greenhill Terrace
1903 Monteith, Bryden, Tower Mains, Libertou
1919 Morham, Alexander H., Mauldslie, Gorebridge
1919 Morham, James, Buteland, Balerno
1919 Morham, John B., of Buteland, Balerno
1903 Morrison, James, 18 George Street
1919 Mortimer, William J. (Board of Agriculture for Scotland), 28 Comely Bank Place
1886 Morton, The Earl of, Dalmahoy, Wilkieston
1899 Muir, John, Freelands, Ratho
1899 Muir, William, Raunas Villa, Cramond Brig
1913 Muirhead, Francis Clay, 24 Charlotte Square
1897 Muirhead, James, South Melville, Lasswade
1887 Mungle, John T., Commercial Bank, West Calder
1905 Munro, Alexander J., 48 Castle Street
1891 Munro, Duncan, 3 Dalrymple Place—*Free Life Member*
1915 Munro, John (Thomas Munro & Son), 21 Grassmarket
1919 Munro, John Culcairn, of Marchbank, Balerno
1870 Mure, W. J., New Club, Princes Street
1904 Murray, James W., Outerston, Gorebridge
1875 Murray, R. W. E., Blackford House, Blackford Avenue—*Free Life Member*
1890 Murray, T. M., W.S., 9 Buckingham Terrace
1879 Murray, W. G. G., 58 Gilmore Place
1885 Murray, William Hugh, W.S., 48 Castle Street
1909 Mylne, James, C.A., 42 Castle Street
1890 Mylne, James, W.S., 36 Castle Street
1908 Nagel, Franz J., 1A George IV. Bridge
1888 Naismith, Robert T., 2 Ethel Terrace
1899 Nasmyth, Dr Thomas Goodall, 27 Palmerston Place
1909 Neill, Andrew, Thorneycrook, Dalkeith
1914 Neilson, George M., Boraston Knowe, Blackhall

Admitted
1914 Neilson, Lieut.-Colonel W. Gordon, C.M.G., D.S.O., Carcraig, Davidson's Mains
1919 Nicolson, Angus (Board of Agriculture for Scotland), 39 Spottiswoode Street
1899 Nisbet, Gavin, Lawfield, Dalkeith
1913 Noble, Alexander, Carsewell, Penicuik
1914 Ogilvie, J. R., The Moat, Roslin
1883 Oliver, James, 11 Claremont Terrace
1906 Park, Robert, Brunstane, Portobello
1889 Pate, Thomas, Windydoors, Stow
1876 Paterson, J. T. S., c/o T. S. Paterson & Davidson, W.S., 6 Rutland Square
1899 Paterson, Thomas L., c/o Mr Paterson, Hardengreen, Dalkeith
1890 Patten, Hugh, W.S., 37 Manor Place
1880 Paul, Sir George M., C.S., LL.D., D.K.S., 16 St Andrew Square
1893 Pender, James, 3 Bright's Crescent
1878 Pendreigh, George, Upper Dalhousie, Bonnyrigg
1914 Peudreigh, James, Dalhousie, Bonnyrigg
1905 Pettigrew, James, Bankton, Mid-Calder
1893 Pitman, A. R. C., W.S., 48 Castle Street
1907 Player, James F., M.R.C.V.S., 16 Home Street
1906 Plenderleith, William, Rosewell Mains, Rosewell
1894 Poole, William, J.P., Englewood, Blackhall
1919 Porthouse, George F. (Board of Agriculture for Scotland), 2 Thirlestane Road
1918 Potter, Alexander, Wester Hailes, Juniper Green
1865 Prentice, R. R., 2 Osborne Terrace
1899 Pretsell, James, 27 Wilton Road
1899 Pringle, James, Crichton House, Pathhead, Ford
1910 Pringle, Thomas, jun., Temple Farm, Gorebridge
1889 Raeburn, Norman, *last known address*, 49 Manor Place—*Free Life Member*
1907 Ralph, William, I.S.O., Lisnacree, Corstorphine
1902 Ralston, Gavin W., Advocate, *last known address*, 6 Abercromby Place
1912 Ralston, W. A., 40 Heriot Row
1915 Ramsay, J. M. (Board of Agriculture for Scotland), 29 St Andrew Square
1881† Ramsay, Colonel R. G. Wardlaw, of Whitehill, Rosewell
1890 Ramsay, William, of Bowland, Stow
1915 Rankin, James, West Mains, West Mains Road
1874 Rankine, Professor John, 23 Ainslie Place
1907 Richardson, Henry E. (of Broadshaw, West Calder), 31 Melville Street
1907 Riddell, John, jun., 5 Grassmarket
1869 Ritchie, Charles, S.S.C., 20 Hill Street
1914 Ritchie, David, Longfaugh, Pathhead, Ford
1893 Ritchie, J. B., 12 St Catherine's Place
1915 Ritchie, John F., Castle Law, Milton Bridge
1915 Roberts, John, Gowanhill Farm, Currie
1909 Robertson, James F., C.A., 40 Balgreen Avenue, Murrayfield
1911 Robertson, W. L., Inspector, Board of Agriculture for Scotland, 29 St Andrew Square
1873 Rodgie, Henry, 7 London Street
1918 Rose, Lieut.-Col. H. Arthur, D.S.O., 5 Carlton Terrace
1872 Ross, George, 69 Leamington Terrace
1907 Ross, James Paull, M.A., W.S., 10 Castle Street

Admitted
1907 Ross, William, 49 Argyll Crescent, Portobello
1899 Roughead, A. J., 21 Lansdowne Crescent
1886 Russell, Alexander, c/o Sim & Whyte, Union Bank Buildings, 22 Leith Walk, Leith
1899 Russell, A. M., 108 West Bow
1872 Rutherford, A., Lilrig, Belgrave Road, Corstorphine
1907 Sanderson, George P., Home Farm, Dalkeith Park, Dalkeith
1892 Sanford, Major Charles Henry, Beeslack, Milton Bridge
1902 Scarlett, James W., Sweethope, Inveresk
1914 Scarlett, Thomas A., 22 Market Street
1888 Scott, Adam, c/o British Linen Bank, Tollcross
1886 Scott, Alexander, *last known address*, 66 Netherby Road, Leith
1883 Scott, George R., Oxgangs, Colinton
1901 Scott, J. Elliot, Board of Agriculture, 29 St Andrew Square
1899 Shaw, David, W.S., 1 Thistle Court
1896 Shaw, James, 13 Roseneath Terrace
1883 Shaw, James T., 4 Belford Place
1889 Shiells, James, 6 Hart Street
1906 Sime, John, *last known address*, 40 Princes Street
1898 Simpson, Mark F., Duddingston Farm, Portobello
1914 Simpson, William, 32 Charlotte Square
1914 Sinclair, Alexander Gray, Thorsville, Blackhall
1868 Smith, Andrew, 10 Victoria Terrace, Musselburgh
1907 Smith, Alexander, Kirkettle, Roslin Castle Station
1881 Smith, A. Davidson, C.A., 4A York Place
1918 Smith, Charles Maitland, C.A., 4A York Place
1899 Smith, George Gardiner, Linnwood, Mid-Calder
1895 Smith, Harry W., W.S., 5 Lynedoch Place
1899 Smith, Henry, W.S., 5 South Charlotte Street
1877 Smith, Robert, 8 Rochester Terrace
1901 Smith, Robert, Cranston Riddell, Dalkeith
1896 Smith, Stephen, 47 George Street
1913 Smith, Wilfrid, N.D.D., 7 Grassmarket
1884 Smith, William, 7 Grassmarket
1915 Smith, William, Milton Bank, Milton Bridge
1899 Smith, William, West Hartwood, West Calder
1910 Smith, William Gardner, 13 George Square
1899 Snodgrass, Matthew W., Langside, Dalkeith
1899 Snodgrass, Peter L., Hopefield, Bonnyrigg
1906 Sommerville, Robert, Wester Cowden, Dalkeith
1893 Somner, George (Peter Lawson & Son, Limited), 1 George IV. Bridge
1919 Speedy, James W., Secretary, Dalkeith Agricultural Society, Braeside, Liberton
1909 Stanfield, Professor Richard, Heriot-Watt College, Chambers Street—*Consulting Engineer to the Society*
1893 Stark, James, 26 Earl Grey Street
1918 Steele, J. H., 2 Ashley Terrace
1912 Steele, James Torrance, B.Sc., College of Agriculture, 13 George Square
1886 Stevenson, David Alan, C.E., 84 George Street

Admitted
1919 Stewart, Duncan (Board of Agriculture for Scotland), 29 St Andrew Square
1881 Stewart, G. M. F., 16 Lansdowne Crescent
1916 Stewart, James Cumming, 13 South St Andrew Street
1893 Stewart, James R. H., *last known address*, 29 St Andrew Square
1915 Stewart, John, Nettlingflat, Heriot
1911 Stewart, John, Newton Farm, Millerhill
1893 Stewart, John, Saughland, Tynehead
1900 Stewart, M. Muir, 11 Eglinton Crescent
1902 Stewart, Ronald, 16 Garscube Terrace
1899 Stewart, W. M., Freugh, Colinton
1912 Stirton, John, Secretary, Highland and Agricultural Society, Levenhall, Musselburgh
1890 Stoddart, James Edward, of Howden, Mid-Calder
1914 Storry, Alexander, of Broomhill, West Calder
1878 Strathern, Robert, W.S., 12 South Charlotte Street
1906 Stungo, S. S., J.P., 47 Cockburn Street
1899 Sutherland, John D., St Martins, Kinnear Road
1858 Swan, James, 6 Clifton Terrace
1885 Syme, David F., C.A., *last known address*, 31 St Andrew Square
1906 Tait, William Ferrier, Galaside, Heriot
1899 Taylor, Thomas W., Seed Merchant, Dalkeith
1915 Taylor, William, 60A Constitution Street, Leith (of Messrs Jas. Miller & Sons)
1900 Thomson, Andrew, D.Sc., 17 Riselaw Road
1889 Thomson, A. J., c/o Wallace & Guthrie, W.S., 1 North Charlotte Street
1915 Thomson, F. A. (Board of Agriculture for Scotland), 29 St Andrew Square
1895 Thomson, Sir James W., of Glenpark, 28 Bernard Street, Leith
1899 Thomson, R. J., 2 Wilton Road
1906 Tillie, David, Brothershiels, Heriot
1902 Tillie, John, Hangingshaw, Heriot
1900 Todd, A. Enever, Stoneybank, Musselburgh
1877 Torrance, T. A., Annfield, Lasswade
1898 Trotter, John, *last known address*, c/o M'Taggart, 5 Argyle Park Terrace—*Free Life Member*
1908 Tudhope, James, Whitburgh Mains, Ford
1909 Tullo, George (Thornton & Co. Limited), 4 Hanover Street
1899 Turnbull, Phipps O., Smeaton, Dalkeith
1873 Tweedie, A. G., *last known address*, 50 Blacket Place
1901 Urmston, Charles Hanson, W.S., 19 Merchiston Place
1896 Usher, Frank James, 22 Belgrave Crescent
1903 Usher, Thomas Leslie, 8 Whitehouse Terrace
1899 Wakelin, W. J. (Oliver & Son, Limited), New Mart Road
1915 Waldie, Charles, S.S.C., 1 Dean Terrace
1899 Waldie, J. Paterson, Haymarket, Edinburgh
1910 Walker, Andrew, Ardbeg, Kames Road, Corstorphine
1899 Walker John, 23 Lismore Crescent
1913 Walker, William, Crofthead Farm, West Calder
1907 Wallace, Alexander, 1 North Charlotte Street

Admitted
1919 Wallace, James Alexander, 12 Abinger Gardens
1878 Wallace, Professor Robert, University, Edinburgh—*Free Life Member*
1908 Watherston, Robert H., 29 Queensferry Street
1882 Watson, G. G., W.S., 4 Glenfinlas Street
1914 Watson, J. A. S., B.Sc., Agricultural Department, University, Edinburgh
1878 Watson, James Graham, Kingston Grange, Liberton
1864 Watson, John, Kingsbeck, 14 Cluny Drive
1914 Watt, James, W.S., 28 Charlotte Square
1882 WAUCHOPE, Sir J. D. D., of Edmonstone, Bart., 12 Ainslie Place
1915 Weatherill, Charles (Board of Agriculture for Scotland), 29 St Andrew Square
1910 Wedderburn, Captain Ernest Maclagan, W.S., 2 Glenfinlas Street
1881 Wedderspoon, George, 2 Blackford Road
1903 Welsh, Robert, Liberton Mains, Liberton
1877 Welwood, J. A. Maconochie, Kirknewton House, Kirknewton
1889 Wemyss, A. W., 3 Arboretum Road
1901 White, Robert S., Halkerston, Gorebridge
1899 White, William, Gortonlee, Lasswade
1884 Whyte, William, 43 Lygon Road
1902 Wight, A. D. (Wight & Co.), Baltic Street, Leith
1914 Wight, Albert Victor (of Wight & Co., Leith), 4 Montebello, Joppa
1898 Wight, George (Wight & Co.), Baltic Street, Leith
1905 Wight, John, Greenpark, Corstorphine
1898 Wilkie, Alexander, *last known address*, 219 Bruntsfield Place
1914 Williamson, Edwin J., 143 Princes Street
1907 Wilson, A. Frank, C.D.A., 164 Braid Road—*Free Life Member*
1919 Wilson, Sir James, K.C.S.I., Chairman, Agricultural Wages Committee, 18 St Andrew Square
1899 Wilson, James, Torcraik, Gorebridge
1914 Wilson, John, Swanfield Mills, Leith
1914 Wilson, Lieut.-Colonel J. T. R., D.S.O., Bentarsen, Slateford
1915 Winter, William, Solicitor, 25 Ainslie Place
1897 Wishart, D. F. (of J. Bisset & Sons, Ltd., Blairgowrie), 18 Picardy Place
1917 Wood, Edward Baxter (Tillie, Whyte, & Co.), 12 Melbourne Place
1900 Wood, James, 3 Strathearn Road—*Free Life Member*
1919 Wood, Thomas Martin (Board of Agriculture for Scotland), 29 St Andrew Square
1882 WRIGHT, Sir R. Patrick, Board of Agriculture for Scotland, 29 St Andrew Square—*Free Life Member*
1914 Wylie, David, Wheatlands, Kirkliston
1905 Wyllie, James, Hillwood Cottage, Ratho Station
1911 Yool, William M., 32 Midmar Gardens
1902 Young, James, East Craigs, Corstorphine
1887 Young, James B., Maryville, Levenhall, Musselburgh
1896 Young, John, Straiton, Loanhead
1907 Young, John H. J., 200 Morrison Street
1907 Young, Thomas, N.D.A., 13 George Square
1906 Young, William Jackson, F.R.C.V.S., D.V.S.M., 39 Leamington Terrace

Admitted
1899 Younger, H., of Benmore, Abbey Brewery
1899 Younger, J. A. C., Abbey Brewery
1899 Younger, William J., 21 Douglas Crescent

EAST LOTHIAN.

1893 Amos, John, *last known address*, Alderston, Haddington
1914 Andrew, Hugh, Lennoxlove, Haddington
1906 Baird, W. A., Lennoxlove, Haddington
1863† BALFOUR, Right Hon. A. J., of Whittinghame, M.P., Prestonkirk
1888 Bayley, Isaac F., Halls, Dunbar
1898 Beveridge, Charles H., Elphinstone Tower, Tranent
1907 Binnie, Thos., Seton Mains, Longniddry
1898 Binnie, Wm. A. G., Birnieknowes, Cockburnspath
1902 Black, George, Penston, Macmerry
1892 Blair, Thomas, Hoprig Mains, Gladsmuir
1902 Blyth, Andrew, Tyninghame, Prestonkirk
1907 Bone, Thomas, East Fenton, Drem
1906 Bowe, W. C., Thorntonloch, Innerwick
1880 Bridges, A. S., Engineer, Haddington
1913 Broadfoot, R. M'C., Whitekirk, Prestonkirk
1902 Brooks, Andrew, North Elphinstone, Tranent
1898 Brown, William, Templehall, Ormiston
1900 Buchan, William, Biel Grange, Prestonkirk
1899 Cairns, John, Waughton, Prestonkirk
1864 Clark, James, Kirklandhill, Prestonkirk
1893 Clark, John, Saltcoats, Gullane
1880 Clark, Thomas, Oldhamstocks Mains, Cockburnspath
1889 Connor, G. A., Craigielaw, Longniddry
1886 Courtney, William, Portobello Farm, Tranent
1895 Curr, William Simpson, Ninewar, Prestonkirk
1911 Dale, John Robert, Scoughall, North Berwick
1896 Deans, John H., Pitcox, Dunbar
1905 Durie, John, Greendykes, Macmerry
1890 Elder, James, Athelstaneford Mains, Drem
1890 Elder, Thomas, of Stevenson, Haddington
1884 Elliot, Walter, Harehead, Cranshaws, Duns (East Lothian)
1907 Ellis, William, Murrays, Ormiston
1907 Ferme, John, Riggonhead, Tranent
1918 Fletcher, Captain Andrew M. Talbot, of Salton Hall, Pencaitland
1907 Fortune, James, Seggarsdean, Haddington
1914 Fortune, Thomas, Stoneypath Tower, Garvald
1899 Fraser, John H., East Pinkerton, Dunbar
1877 Fyshe, Peter, Newtonlees, Dunbar
1902 Gardner, Daniel, Stonelaws, Prestonkirk
1899 Gibson, Walter H., Camptoun, Drem
1874 Glendinning, J. P., Fenton Barns, Drem
1918 Gray, William, Pinkerton, Dunbar
1882 Gray, Lieut.-Colonel W. W., of Nunraw, Prestonkirk
1893 Gregor, Charles E., Innerwick, East Lothian
1899 Hartley, G. W., Moresby, North Berwick

Admitted
1894 Henderson, James, South Elphinstone, Tranent
1893†Hepburn, Sir Archibald Buchan-, of Smeaton, Bart., Prestonkirk (Letham, Haddington)
1907 Hogg, Robert N., Myles, Tranent
1914 Hogg, William, Newlands, Gifford
1886 Hope, Harry, M.P., Barneyhill, Dunbar
1907 Hope, Thomas C., Aikengall, Cockburnspath
1907 Hope, William W., Knows, Prestonkirk
1907 Inch, Adam, Lempock Wells, Pencaitland
1899 Jeffrey, James, Deuchrie, Prestonkirk
1912 Johnstone, James, Fulfordlees, Cockburnspath
1884 Kerr, John, Barneymains, Haddington
1885 Kinloch, Sir David A., of Gilmerton, Bart., Drem
1898 Kinnaird, Andrew, The Grange, Garvald, Prestonkirk
1908 Kinnaird, John, New Mains, Stenton, Prestonkirk
1905 Kirk, Thomas, of Abbey Mains, Haddington
1905 Lambie, John, Rhodes Farm, North Berwick
1863 Lesslie, James, Beanston, Haddington
1905 Logan, David, Saltoun Hall, Pencaitland
1918 Logan, Thomas Munro, Estate Office, Saltoun, Pencaitland
1914 Lothian, George, Prora, Drem
1907 Macdonald, A. D., Yester Estates Office, Gifford
1899 M'Kelvie, William, Parkside, Haddington
1907 Mackie, George, *last known address*, Kingslaw, Tranent
1919 M'Naughtan, Robert, Yester Estates Office, Gifford
1910 M'Nicol, William, Castleton, North Berwick
1877 Mark, John, Sunnyside, Prestonkirk
1899 Mason, William, Amisfield Mains, Haddington
1914 Miller, Daniel, West Garlton, Haddington
1914 Miller, Hugh, West Fortune, Drem
1914 Miller, Robert, Ferrygate, North Berwick
1910 Mitchell, James, Wamphray, North Berwick
1914 Mitchell, T. B., jun., The Retreat, Dunbar
1910 Moffat, George, Williamston, North Berwick
1910 Muirhead, Douglas, Townhead, Gifford
1870 Murray, David, Quarryford, Gifford
1907 Murray, W., Solicitor, Haddington
1890 Nisbet, C. C., of Stobshiel, Humbie
1899 Pace, Ferrier, Ormiston Mains, Ormiston
1900 Park, John, Setonhill, Longniddry
1904 Park, Matthew, Hoprig, Macmerry
1907 Park, Thomas B., Haddington
1905 Peters, J. S., British Malt Products Co., Dunbar
1889 Polwarth, The Hon. The Master of, Humbie House, Humbie, East Lothian
1919 Rattray, John, Ninewar, Prestonkirk
1894 Reid, James, of Tyneholm, Pencaitland
1914 Renwick, Andrew, Byres, Longniddry
1912 Renwick, Andrew, Skateraw, Innerwick
1898 Riddell, David, West Peaston, Ormiston
1898 Riddell, George, Mungoswells, Drem
1894 Robertson, John, Beanston Mains, Haddington

Admitted
1909 Robertson, Thomas Sheriff (Thomas Sheriff & Co.), West Barns, Dunbar
1895 Ronaldson, George, Kilduff Mains, Drem
1899 Russell, Charles, West Mains, Haddington
1907 Russell, David, Redmains, Pencaitland
1915 Russell, Peter, West Windygoul, Tranent
1899 Scott, Joseph G., Congalton, Drem
1878 Sharp, John J., Ewingston, Humbie—*Free Life Member*
1899 Shields, George Bertram, Dolphingston, Tranent
1912 Shields, James, Longniddry
1899 Shiels, Thomas J., Carfrae, Prestonkirk
1908 Shirreff, Charles R., Southfield, Longniddry
1915 Simpson, William D., Highfield, Dirleton
1907 Slight, David, North Mains, Ormiston
1882 Smith, E. Hedley, B.L., Whittingehame, Prestonkirk—*Free Life Member*
1891 Spence, A. G., Longyester, Gifford
1915 Spiganovicz, Arthur Julian de, M.B., Ch.B., Tranent
1899 Stenhouse, James, Home Farm, Spott, Dunbar
1894 Steven, John, Begbie, Haddington
1907 Stewart, James, Pressmennan, Prestonkirk
1907 Stewart, John M., Stoneypath, Prestonkirk
1905 Stodart, Hugh, Wintonhill, Pencaitland
1897 Stodart, John, Adniston, Macmerry
1918 Stoddart, Charles, of Kingston, North Berwick
1907 Tait, John, Nether Hailes, Haddington
1884 Thin, John, Upper Keith
1915 Thomson, John, Estate Overseer, Thurston Home Farm, Innerwick
1907 Thomson, John, Wheatrigg Farm, Longniddry
1907 Turnbull, Mark J., Tynemount, Ormiston
1913 Tweeddale, The Marquis of, Yester, Gifford
1907 Tweedie, Robert W., Coates, Longniddry
1899 Wallace, Forbes, Hovendene, Prestonkirk
1881 Wallace, John, Hailes, Haddington
1907 Watson, Robert S., Samuelston, Haddington
1888 Watt, Miss Adelaide, of Spott, Dunbar
1899 Watt, James William, New Mains, Drem
1919 Watt, David, Carlaverock, Tranent
1898 Weddell, John, Snawdon, Gifford
1884 Wemyss and March, The Earl of, Gosford, Longniddry
1919 Will, T. K., Gifford Bank, Gifford
1895 Wilson, David, Agricultural Engineer, East Linton, Prestonkirk
1899 Wilson, Robert, Sheriffside, Gifford
1910 Wright, William, Preston, Prestonpans
1893 Wylie, Robert, Heugh, North Berwick
1907 Wyllie, John, Castlemains, Gifford
1899 Wyllie, William R., Tranent Mains, Tranent
1877 Young, D. S., 39 Westgate, North Berwick

WEST LOTHIAN.

1899 Alexander, Thomas, Nethermuir, Bathgate
1898 Allan, Robert, Halfway House, Whitburn—*Free Life Member*
1895 Allison, David, Duddingston, South Queensferry
1906 Allison, James, Carlowrie, Kirkliston

Admitted
1918 Allison, William, New Mains, Kirkliston
1914 Anderson, W., M.B., Armadale, West Lothian
1906 Arkley, Robert, Kingsfield, Linlithgow
1903 Armour, Harry, Niddry Mains, Winchburgh
1883 Bartholomew, John, Duntarvie, Winchburgh
1906 Bartie, Thomas, Estate Office, Dundas Castle, South Queensferry
1913 Baxter, William F., Hainings, Bo'ness
1915 Black, Andrew, Stoneyburn, Fauldhouse, Linlithgow
1899 Borthwick, James, V.S., Kirkliston
1907 Bowie, Andrew, Grougfoot, Linlithgow
1907 Bowie, William, Parkhead, Linlithgow
1907 Braes, William, M.R.C.V.S., Fleetwood, Linlithgow
1918 Brown, Robert C., Upper Bonnington, Linlithgow
1867 Burton, J. Tait, Scotstoun, South Queensferry
1911 Cadell, Lieut.-Col. J. M., Indian Medical Service, Foxhall, Kirkliston
1895 Cadell, Henry M., of Grange, Linlithgow
1900 Cadzow, James, Kilpunt, Broxburn
1911 Cadzow, John, Glendevon, Winchburgh
1899 Clark, John, Pardovan, Philpstoun
1904 Cochrane, Archibald, Trinlaymire, Linlithgow
1882 Crawford, Alexander, Bo'ness
1907 Crawford, James, Cousland, Bathgate
1915 Dalgleish, James, Newbigging Farm, Winchburgh
1919 Dalmeny, The Hon. Lord, Dalmeny House, Edinburgh
1919 Dudgeon, Alexander Neil, Easter Dalmeny, Dalmeny
1869 Dudgeon, George, Almondhill, Kirkliston
1887 Dudgeon, John G., Easter Dalmeny, Dalmeny
1889 Ferrier, William C., *last known address*, Gowanbank, Avonbridge
1905 Fraser, Thomas, Millrig Farm, Kirkliston
1905 Frew, John, Sanitary Inspector, Bathgate
1906 Galbraith, Alexander, Upper Kinneil, Linlithgow
1919 Galloway, Thomas, Kirk Hill, Broxburn
1909 Glen, Enoch, Kaim Park, Bathgate
1915 Gordon, David R., Merchant, Bathgate
1910 Grant, George, Blackridge, West Lothian
1912 Hodge, George, Woodend, Armadale
1913 Hog, Stuart B., of Newliston, Kirkliston
1906 Howat, James M., Burghmuir, Linlithgow
1912 Howie, Thomas, Paddockhall, Linlithgow
1908 Lawson, James, Three Mile Town, Linlithgow
1912†Linlithgow, The Marquis of, Hopetoun House, South Queensferry

Admitted
1908 M'Knight, George Simpson, Procurator-Fiscal, Linlithgow
1885 M'Laren, J. T., The Leuchold, Dalmeny House, Edinburgh
1900 Marshall, William, Barbauchlaw, Armadale
1908 Martin, Samuel, Clydesdale Bank, South Queensferry
1879 Masson, Rev. Alex., The Manse, Kirkliston
1914 Meldrum, A. J., of Dechmont, Uphall
1918 Mitchell, Alexander, Bridgend, Linlithgow
1859 Morrison, J., West Dalmeny, Dalmeny
1915 Morrison, Mark C., Wester Dalmeny, Dalmeny
1910 Newlands, Alexander, Implement Works, Linlithgow
1918 Nimmo, John, Craigton, Winchburgh
1907 Nisbet, Robert, Hilderston, Bathgate
1914 Padkin, George, Haugh, Kirkliston
1893 Paul, James, Walton, Linlithgow
1908 Paul, John, Stacks, Linlithgow
1896 Ralston, A. Agnew, Philpstoun House, Philpstoun
1907 Ramsay, T. Y., District Road Surveyor, Bathgate
1912 Robertson, Archibald, Mannerston, Linlithgow
1868*†Rosebery, The Earl of, K.G., K.T., Dalmeny House, Edinburgh
1889 Rough, Robert L. (R. Rough & Sons), Broxburn
1908 Russell, Richard, Mosside Farm, Bathgate
1912 Russell, William, Kirkroads, Bathgate
1900 Sandilands, William, Muldron, Fauldhouse
1913 Shanks, Thomas, Bormie, Linlithgow
1912 Sibbald, David, Hardhill, Bathgate
1903 Sinclair, George, Home Farm, Dalmeny House, Edinburgh
1919 Smith, Alexander, Tarrareoch, Armadale, Linlithgow
1906 Smith, Robert, Westfield, Winchburgh
1906 Stewart, George, Drum Farm, Bridgeness
1900 Stewart-Clark, Sir John, Bart., of Dundas Castle, J.P., D.L., South Queensferry
1909 Stirling, William, Drum Farm, Whitburn
1915 Storry, James, Northfield, Fauldhouse
1892 Thomson, Seton Murray, Preston House, Linlithgow
1912 Tod, John, Starlaw, Bathgate
1912 Wallace, William, Balbardie, Bathgate
1912 White, William, Royal Hotel, Bathgate
1907 Wilson, William, Boghall, Linlithgow
1915 Wilson, William L., Cowhill Farm, Whitburn
1912 Wolfe, Robert, The Elms, Bathgate
1907 Wood, James, Wallhouse, Torphichen
1915 Wyllie, William, Brompark, Torphichen
1915 Young, James W., Kinneil Estate Office, Bo'ness
1913 Young, Scott, Whitebaulks, Linlithgow

Number of Members, 819.

5.—ABERDEEN DIVISION.

EMBRACING THE

COUNTIES OF ABERDEEN, BANFF, FORFAR (EASTERN DISTRICT), AND KINCARDINE.

ABERDEEN.

Admitted
1868*†ABERDEEN, The Marquis of, K.T., Haddo House, Aberdeen
1914 Adams, James, Baads, Peterculter
1914 Adams, John, Nether Anguston, Peterculter
1875 Ainslie, William, Logierieve, Ellon
1876 Alexander, George, South Balnoon, Huntly
1917 Alexander, George S., Ardfork, Old Meldrum
1901 Allan, James R., Ashgrove Engineering Works, Aberdeen
1889 Allan, John, Aikenshill, Newburgh, Aberdeen
1901 Allan, Richard S., Ashgrove Engineering Works, Aberdeen
1894 Anderson, George, Nether Aucharnie, Forgue, Huntly
1885 Anderson, George, West Fingask, Old Meldrum
1902 Anderson, George Alexander, Comisty, Forgue, Huntly
1908 Anderson, Robert, of Fingask, Old Meldrum
1902 Anderson, Robert, Aucharnie, Forgue, Huntly
1908 Anderson, Robert John, jun., Auctioneer, Aberdeen
1907 Anderson, William, Home Farm, Hopewell, Tarland
1908 Anderson, William, West Cevidly, Keig
1894 Anderson, William, Saphock, Old Meldrum
1876 Anderson, William, Wardes, Kintore
1907 Argo, George, Petty, Fyvie
1902 Armstrong, John, Whitehills, Cairnie, Huntly
1903 Arnott, John, Rosebank, Huntly
1893 Ballingall, Robert Rennie, *last known address*, Crimmonmogate, Lonmay
1893 Barclay, George, Strocherie, King Edward, Aberdeen
1918 Barclay-Harvey, Charles Malcolm, Dinnet, R.S.O.
1900 Barclay-Harvey, James C., of Kinord, J.P., Dinnet
1883 Bardgett, John, 48 Market Street, Aberdeen—*Free Life Member*
1918 Barr, Rev. R. Littlejohn, Manse, Kinellar
1902 Barrie, James, Home Farm, Balmedie, Aberdeen
1884 Barron, George F., Thomastown, Auchterless
1885 Bean, James, Mains of Dumbreck, Udny

Admitted
1919 Beattie, Alexander, Tocherford, Warthill, Aberdeenshire
1902 Beddie, Alexander, Bridgend, Fraserburgh
1906 Beddie, James, Banks, Strichen
1906 Beddie, L. B., Saltoun Place, Fraserburgh
1912 Bell, Alexander A., Whitewell, Tyrie, Fraserburgh
1904 Bell, Andrew, Litterty, Turriff
1902 Bell, John, Tyrie Mains, Fraserburgh
1888 Bennet, L., 33 King's Crescent, Aberdeen
1894 Bennet, Wm., Glenburnie, Inverurie
1919 Blair, Goodall (D. Macandrew & Co.), 120 Loch Street, Aberdeen
1918 Birnie, John, Wester Rora, Longside
1915 Booth, Alexander, Hill of Ardo, Udny Station, Aberdeen
1903 Booth, James, of Downiehills, Peterhead
1893 Booth, Matthew, Darrahill, Foveran (Mastrick Dairy, Desswood Place, Aberdeen)
1908 Braid, F. L., Ellerslie, Cults, Aberdeen
1895 Brand, Robert, Ardiffery, Hatton, R.S.O.
1908 Bremner, John, Old Mill, Strichen
1895 Brown, Alexander G., Witchhill House, Fraserburgh
1902 Brown, James, Braco, Strichen
1884 Brown, John, 23 Roslin Terrace, Aberdeen
1894 Brown, Robert, 31 Rubislaw Den (South), Aberdeen
1902 Brown, Robert J., Overhill, Whitecairns
1909 Bruce, George A., Inschfield, Insch
1876 Bruce, James, Collithie, Gartly
1876 Bruce, Peter, Greenhaugh, Insch, Aberdeen
1901 Bruce, Robert, Heatherwick, Inverurie
1909 Burn, Colonel, M.P., Fyvie Castle, Fyvie
1918 Burnet, George H. M., Elrick House, New Machar
1911 Burnett, Miss Grace, Glenwood, Cults, Aberdeen
1875 Burr, Alexander, Tulloford, Old Meldrum
1900 Calder, Andrew, Cairnton, Lumphanan
1912 Calder, Rev. James Jolly, Manse of Cairnie, Huntly
1901 Campbell, George, Harthill, Bieldside, Aberdeen
1900 Cantlay, William G., Glasgoego, Kinellar, Aberdeen
1894 Cardno, Andrew P., Upperton, New Deer

Admitted
1907 Catto, James A., 100 Mile End Avenue, Aberdeen
1894 Chalmers, John Lovie, Mains of Cardno, Fraserburgh
1918 Chalmers, L. M'D., Auchindoir Estates Office, Alford
1899 Chapman, Archibald, of Slackadale, Turriff
1873 Charles, John, Banker, Inverurie
1894 Charles, William, Gammons, Rothienorman
1908 Christie, Charles, Estates Office, Strathdon
1908 Clapperton, James M., 77 Crown Street, Aberdeen
1903 Cocker, John, Hill of Petty, Fyvie
1910 Collie, George, Hillbrae, Bourtie, Inverurie
1886 Collie, William, Priestwells, Insch
1908 Coltman, W. H., of Blelack and Deskry, Dinnet, Aberdeen
1901 Cook, James M., Waterside of Forbes, Alford
1894 Cook, Thomas Nicol, Waterside, Newburgh, Aberdeen
1894 Cooper, John A., Dunnydeer, Insch
1891 Copland, Robert, Milton, Ardlethen, Ellon
1908 Courage, David, Royal Oak Bar, Marischal Street, Aberdeen
1909 Cowan, H. Hargrave, 41 College Bounds, Aberdeen
1908 Cowe, Alexander, 1 Castle Street, Ellon
1908 Cowie, G. W., Easter Bo., Fisherie, Turriff
1887 Crabb, Dd., New Aberdour, Fraserburgh
1902 Craig, Alexander, 53 Schoolhill, Aberdeen
1912 Craigie, William, Mains of Blackhouse, Peterhead
1878 Cran, George, Old Morlich, Glenkindie
1902 Cran, William, Gerrie, Huntly
1907 Crawford, K. H., Beaconsfield House, Aberdeen
1883 Croil, Thos., 6 Carden Terrace, Aberdeen
1902 Crombie, Alexander, Woodend, New Machar
1910 Crombie, Theodore, of Culter, Culter House, Milltimber, Aberdeen
1908 Cruickshank, Alexander, Aberdeen Lime Co., Port Errol
1902 Cruickshank, George Leslie, The Neuk, Fyvie
1911 Cunningham, John, East Barnyards, Peterhead
1909 Cushnie, James, Collonach, Drumoak
1886 Darling, D. C., *last known address*, 2 Rosefield Avenue, Aberdeen
1902 Davidson, Andrew, Mains of Balmaud, King Edward, Aberdeen
1896 Davidson, Major D. F., of Dess, Dess Station, S.O., Aberdeen
1894 Davidson, James, of Holmwood, Aberdeen
1894 Davidson, James, Newton, Cairnie, Huntly
1918 Davidson, L. F. W., Huntly Lodge, Huntly
1909 Davidson, Samuel, Northseat, Auchedly, Tarves
1902 Davidson, William, Architect, Ellon
1906 Davidson, William, Burnside House, Turriff
1894 Dawson, George, Phingask, Fraserburgh
1886 Dawson, W. F. G., North of Scotland Bank, Insch

Admitted
1896 Diack, James, 4 St Mary's Place, Inverurie
1912 Diack, William, Knockollochie, Pitcaple
1884 Duff, G. A., of Hatton, Turriff
1918 Duncan, Alexander, Penelopefield, Turriff
1901 Duncan, John William, 477 King Street, Aberdeen
1906 Duncan, Robert, Harthill, Whitehouse, Aberdeenshire
1918 Duncan, William, Dee Castle, Dinnet
1908 Dunn, Peter, Wester Leochel, Whitehouse
1894 Durno, James, Easter Town, Fyvie, Old Meldrum
1879 Durno, James, Uppermill, Tarves
1909 Durno, James, jun., Crichie, Inverurie
1894 Durno, James, Rothiebrisbane, Fyvie
1913 Durno, Leslie, Uppermill, Tarves
1885 Durno, Leslie, Kirkhill, Old Meldrum
1908 Duthie, J. A. (Ben Reid & Co.), Pinewood Park, Mannofield, Aberdeen
1868†Duthie, William, Collynie, Tarves
1902 Ellis, James A., Mains, Cairncoullie, Cushnie, Alford
1902 Ellis, William D., Kinclune, Towie, Glenkindie
1901 Elmslie, William, Crookmore, Alford
1917 Esslemont, G. G., North of Scotland College of Agriculture, 41½ Union Street, Aberdeen
1902 Farquhar, Charles, Skelmanae, Strichen
1901 Farquharson, W. S., of Whitehouse, Aberdeen
1872 Ferguson, Lieut.-Col. George A., of Pitfour, Mintlaw
1904 Florence, Alexander, Knowley, Wartbill, Aberdeen
1901 Forbes, Harry, Greystone, Tullynessle, Alford
1893 Forbes, J. C. Ogilvie, of Boyndlie, Fraserburgh
1903 Forbes, William, Muirton of Barra, Old Meldrum
1915 Fordyce, Alexander Dingwall, Brucklay Castle, Maud
1909 Fowlie, John, Adziel, Strichen
1872 France, C. S., 13 Cairnfield Place, Aberdeen
1908 Fraser, Hugh, Commercial Hotel, New Aberdour
1908 Gall, William, Newton of Hythie, Mintlaw Station
1874 Garden, Robert, Menie, Belhelvie
1891 Gammell, Sydney J., Countesswells House, Bieldside, Aberdeen
1882 Garvie, R. G., Bon-Accord Lane, Aberdeen
1902 Gilbert, Francis, Whiteside, Tullynessle, Alford
1902 Glen, William, *last known address*, Clerkhill, Peterhead
1904 Godsman, David M., Mains of Fedderate, Maud
1876 Gordon, Henry, *last known address*, of Manar, Inverurie
1886 Gordon, Henry G. Fellowes, of Knockespock, Clatt
1905 Gordon, Reginald Hugh Lyall, of Abergeldie (15 Belmont Park, Lee, Kent)
1894 Gordon, William Fowlie, Broomhills, Sandhaven
1908 Gordon, Colonel John Wolrige, of Halhead, Esslemont, Ellon
1879 Grant, John, J.P., 7 Devanha Gardens, Aberdeen
1902 Gray, John, Ardlaw Mains, Fraserburgh

Admitted
1894 Gray, William, Balgove, Old Meldrum
1902 Gregor, James, Invercauld Arms Hotel, Braemar
1918 Greig, George C., Muirton, King Edward
1884 Greig, William, Laggan Cottage, Milltimber
1897 Harper, Robert J., Mellinside, Insch
1894 Harvey, Alex. Hunter, Fiddesbeg, Udny Station, Aberdeenshire
1913 Harvey-Loutit, J., North of Scotland College of Agriculture, 41½ Union Street, Aberdeen
1885 Hay, Alexander, 18 Gladstone Place, Aberdeen
1902 Hay, John Rae, Little Ythsie, Tarves
1902 Henderson, Alexander, Laggan Cottage, Milltimber, Aberdeen
1902 Henry, A. M., Affleck, Huntly
1903 Henry, James, Kinaldie, Dinnet
1912 Hepburn, Charles, Turnwathie, Strichen, Fraserburgh
1909 Hopkins, John (North of Scotland Milling Co., Ltd.), Inverurie
1901 Howie, George, M.R.C.V.S., Alford
1884 Hunter, Charles (Bon Accord Engineering Co., Ltd.), Upper Mills of Drum, Crathes
1903 Hunter, Stephen (Northern Agricultural Co., Ltd.), Aberdeen
1872†Huntly, The Marquis of, Aboyne Castle, Aboyne
1884 Hutcheon, Alexander, Nether Ordley, Auchterless, Turriff
1899 Hutcheon, George, Skeen House, Turriff
1905 Hutcheon, John, yst., Ordley, Auchterless, Turriff
1908 Imlach, Alexander, Ellangowan, Alford
1908 Ingram, Alexander, Balquharn, Alford
1915 Ingram, Alexander C., Bridgend, Auchterless
1911 Ironside, William, Littlehill, Maud, Aberdeenshire
1905 Irvine, A. F., of Drum, Drumoak
1909 Jessiman, James, North of Scotland Milling Co., Ltd., Inverurie
1898 Johnston, Alexander, M.R.C.V.S., Black Bog, Rothienorman
1894 Keith, Alexander, Kinnermit, Turriff
1894 Keith, Alexander, Spreader Hill, Lonmay
1907 Keith, James, Pitmedden, Udny
1901 Keith, M. J., Bruckley Estates Office, Aberdour House, New Aberdour
1913 Kellas, James C., Balmacassie, Ellon
1902 Kemp, Charles, Auchincrieve, Rothiemay
1913 Kemp, William, Aberdeen Commercial Co., Ltd., Aberdeen
1907 Kemp, William, Aldie, Port Erroll, Cruden
1876 Kilgour, Robert, Ardlin, Ellon
1908 King, Lieut.-Col. Alex. J., D.S.O., Tertowie, Kinellar
1910 King, Andrew, Conland, Forgue, Huntly
1876†Kintore, The Earl of, Keith Hall, Inverurie
1885 Law, John, Lochend of Barra, Inverurie
1876 Ledingham, A., Eden Cottage, Wartle, Aberdeenshire
1889 Ledingham, J. K., North Plaidy, Turriff —*Free Life Member*
1908 Leggat, William K., Yonderton, Turriff
1896 Leith, Colonel Alexander, of Glenkindie, Aberdeenshire
1890†Leith of Fyvie, Lord, Fyvie Castle, Fyvie

Admitted
1869 Leith, Major Thomas, Petmathen, Oyne
1900 Leith-Hay, Chas. E. N., of Leith Hall, Kennethmont
1885 Leslie, David, Lochhills, Dyce
1909 Leslie, J. Dean, Nethermuir, New Deer
1908 Leslie, James, Middlemuir, Belhelvie
1898 Leslie, John, The Briars, Bieldside, Aberdeen—*Free Life Member*
1915 Leslie, Peter, M.A., B.Sc., Lecturer on Forestry, Marischal College, Aberdeen
1892 Littlejohn, Geo., *last known address*, Wellhouse, Alford
1906 Lumsden, E. F., of Balmedie, Aberdeen
1902 Lumsden, Hugh P., Mains of Lickleyhead, Insch
1894 Lyon, Sir Alexander, 10 Queen's Road, Aberdeen
1894 Macdonald, James, Bridgend, Mossat, Kildrummy, Aberdeen
1902 M'Donald, William Yeats, of Aquharney, Hatton
1901 Macintyre, A. M., Towie Barclay, Auchterless Station
1908 M'Kay, Peter, Kinnoir, Huntly
1883 Mackenzie, William, *last known address*, 60 Hamilton Place, Aberdeen
1916 Mackie, Maitland, Ythsie, Tarves
1908 Mackie, Thomas, Mains of Rhynie, Rhynie, Gartly
1908 M'Kinlay, James, The Mill Farm, New Aberdour, Fraserburgh
1894 M'Laggan, James, Bank Agent, Torphins
1887 M'Lean, Neil, of Breda, Alford
1918 M'Robert, Alasdair Workman, Douneside, Tarland
1904 M'Robert, A. T. (Aberdeen Lime Co.), Aberdeen
1887 Maitland, Harry Reid, Haddo, Methlick —*Free Life Member*
1894 Maitland, Robert Cruickshank, Balhalgardy, Inverurie
1910 Maitland, William, East Balhalgardy, Inverurie
1902 Maitland, William, Pitdulsie, Auchterless, Turriff
1908 Marshall, William, 7 Langstane Place, Aberdeen
1914 Massie, George Duncan, Solicitor, 147 Union Street, Aberdeen
1902 Massie, James, Milltack, King Edward, Aberdeen
1908 Melvin, Peter, Middle Gateside, Culsalmond, Insch
1892 Mennie, A. M'G., Brawlandknowes, Gartly
1914 Mennie, George, Lochend, Wartle, Aberdeen
1875 Merson, James, Craigwillie, Huntly
1893 Merson, John, Millhill, Gartly
1914 Michie, Henry M., Balmoral, Ballater
1895 Michie, John, M.V.O., Balmoral, Ballater
1908 Middleton, A., Belmont, Aberdeen
1906 Miller, J. P., Sandilands Chemical Works, Aberdeen
1895 Milligan, D. M. M., 12 Dee Street, Aberdeen
1908 Milne, Alexander, Kingseat Asylum, New Machar
1908 Milne, Andrew, 59 Blenheim Place, Aberdeen
1904 Milne, Colonel George, Logie Elphinstone, Pitcaple
1908 Milne, Harry, Fetterletter, Fyvie
1894 Milne, James, Pittendrum, Pitsligo, Fraserburgh

Admitted
1903 Milne, John, Contractor, Braemar
1914 Milne, John, Mains of Williamstone, Insch
1887 Milne, Robert, Corsdean, Huntly
1908 Mitchell, John, Royal Athenæum Hotel, Aberdeen
1868 Mitchell, William A., Auchnagathel, Whitehouse
1886 Moir, Alexander, 163 Clifton Road, Aberdeen
1907 Moir, J. R., Central Auction Mart, Kittybrewster, Aberdeen
1885 Moir, Robert, *last known address*, Tarty, Ellon
1913 Morison, A. E. F., of Bognie, Mountblairy House, Turriff
1894 Morrison, Alexander Smith, Stonebriggs, Rosehearty
1908 Morrison, Anthony, 5 Queen's Gardens, Aberdeen
1908 Morrison, George Alex., Botary Mains, Cairnie, Huntly
1908 Morrison, James, Durno House, Pitcaple
1908 Muller, Adolph, of the Northern Sheet Metal and Engineering Co., Ltd., 184 West North Street, Aberdeen
1902 Murison, William, County Clerk, Aberdeen
1911 Murray, Alexander M., Aberdeen Commercial Co., Ltd., Aberdeen
1909 Murray, George, Faichfolds, King Edward, Aberdeen
1914 Murray, James, Linden Cottage, Old Meldrum
1894 Mutch, James G., Malvern, Bridge of Don, Aberdeen
1902 Nicol, Randall James, of Ballogie, Aboyne
1908 Niven, Samuel A., Sunnyside, Rothienorman
1882 Norrie, William, Cairnhill, Monquhitter, Turriff—*Free Life Member*
1894 Ogg, Charles, Baltimore, Glenbucket
1882 Ogston, Alexander M., of Ardoe, Aberdeen
1916 Ogston, James, Bridgend, Port Errol
1894 Park, William, Woodhead, Cairness, Lonmay, Fraserburgh
1909 Paterson, Robert, Lendrum, Auchterless Station
1909 Penny, Charles, Skillymarno, Strichen
1908 Petrie, John M'G., Glenlogie, Forbes, Alford
1885 Philip, Forbes, Road Surveyor, Ellon
1908 Philip, J. F., Garchory, Corgarff, Strathdon
1894 Philip, John, Bellevue, Dyce, Aberdeenshire
1895 Pirie, Arthur, Cartlehaugh, Mintlaw Station
1859 Pittendrigh, A., Mains of Park, Lonmay
1909 Primrose, James, Anchinclech, Rothiemay
1905 Profeit, W. J., M.A., B.Sc., Marischal College, Aberdeen
1882 Rae, William, Advocate, Aberdeen
1894 Ramsay, William, jun., The Bungalow, Dyce
1903 Reid, Alfred H., Hillhead, Ellon, Aberdeen
1891 Reid, David, Crofts of Glenmuick, Ballater
1884 Reid, John, Monaltrie, Alford
1894 Reid, John Low, Cromley Bank, Ellon, Aberdeenshire
1885 Reid, William, 8 Hadden Street, Aberdeen
1908 Reith, William, Kennerty, Peterculter
Admitted
1909 Reith, William, Lower Middlefield, Woodside, Aberdeen
1908 Rennie, C., Wester Fintray, Kintore
1908 Rennie, James, Milton, Fintry, Kinaldie
1914 Rennie, John, Upper Anguston, Peterculter
1902 Ritchie, John Neish, Schoolhill, Turriff
1908 Robertson, Alexander, Burnside, Newhills, Countesswells, Aberdeen
1908 Robertson, James, 93 Clifton Road, Aberdeen
1885 Robson, Alexander (W. Smith & Sons), 18 Market Street, Aberdeen
1908 Roger, Peter, Kinbroon, Rothienorman
1885 Ross, A., Arngrove, Torphins
1858 Ross, H., care of the Secretary, Mutual Improvement Association, Tarland
1893 Ross, R. R., Balmoral Buildings, 67-71 Green, Aberdeen
1902 Runciman, Frank S., Auchmill, King Edward, Aberdeen
1886† Saltoun, Lord, Philorth House, Fraserburgh
1909 Sangster, Alex., Drumhead, Belhelvie, Whitecairns
1914 Sangster, George, Eddieston, Peterculter
1906 Scott, John, Nether Brunstane, Huntly
1881 Scott, Ronald, 58 Fountainhall Road, Aberdeen
1907 Sempill, Lord, Fintray House, Aberdeenshire
1894 Sharp, James Smith, Overhall, Premnay, Insch
1894 Shearer, Eric James, Maybank Works, Turriff
1906 Simpson, Alexander, Broadland, Cairnie, Huntly
1894 Simpson, George, Fernhill, Countesswells, Aberdeen
1885 Simpson, John, Implement Maker, Peterhead
1895 Sivewright, Adam, M.R.C.V.S., Tarland
1889 Skirving, Robert, of Cobairdy, Huntly
1894 Sleigh, C. W., Strichen, Aberdeenshire
1896 Sleigh, John P., St John's Wells, Fyvie
1902 Smith, Andrew, Invercauld Estate Office, Ballater
1885 Smith, Arthur, *last known address*, Oakland Cottage, Kingsgate, Aberdeen
1902 Smith, Charles, Westerton, Huntly
1895 Smith, C. G., Estate Office, The Mains, Haddo House, Aberdeen
1894 Smith, George, Kilreen, 23 King's Gate, Aberdeen
1885 Smith, James, Bank House, Strichen
1908 Smith, James, Northern Agricultural Co., Ltd., Turriff
1909 Smith, James A., Bank House, Strichen
1909 Smith, Montgomerie, Hillocks, Newhills, Bucksburn, Aberdeenshire
1894 Smith, Robert, Boggieshalloch, Turriff
1912 Smith, Trevor A. H., Bramblehurst, Anderson Drive, Aberdeen
1903 Smythe, George H., Balcarres Hotel, Echt
1908 Snowie, George, Taitswell, Mintlaw Station
1902 Spark, Rev. Wm. A., Glenbucket, Bridge of Bucket
1896 Stewart, Alexander G., Ballaterach, Dinnet
1885 Still, Geo., Strathray, Kinnellar, Aberdeen
1893 Stodart, George, *last known address*, Huntly
1919 Stoddart, John, Aryburn, Dyce
1908 Stoddart, William, Perwinnes, Dyce

Admitted
1883 Strachan, Alexander, Wester Fowlis, Alford
1878 Strachan, Charles, Tillyorn, Lumphanan
1894 Strachan, Patrick, Eastown, Tarland
1894 Strachan, William, Upper Muirden, Turriff
1885 Stuart, E. R. Burnett, of Dens and Crichie, Mintlaw
1909 Stuart, Robert, Parks, Logie-Coldstone, Dinnet
1894 Stuart, William, Earlsfield, Kennethmont
1919 Taylor, Alexander Watt, Bog of Artamford, Maud, Aberdeen
1909 Taylor, George, Home Farm, Inchgarth, Cults
1913 Tocher, J. F., D.Sc., F.I.C., Crown Mansions, 41½ Union Street, Aberdeen (*Consulting Chemist to the Society*)
1909 Trail, W., Riding Academy, Queens' Cross, Aberdeen
1873 Udny, J. H. F., of Udny and Dudwick, Aberdeen
1902 Walker, George, Tillygreig, Udny
1893 Walker, Roderick, Cuttlecraig, Inverurie
1894 Watson, David, Burnthill, Fraserburgh
1894 Watson, William, Middlemuir, Aberdour, Strichen
1894 Watt, George, *last known address*, Coralhill, Fraserburgh
1889 Watt, John, Wester Blair, Fintray, Kinaldie
1894 Webster, James C., 14 Belvidere Crescent, Aberdeen
1908 Webster, John Duthie, The Bank, Tarves
1893 Webster, William, 15 Louisville Avenue, Aberdeen
1902 Williamson, David D., Auldtown of Carnousie, Forglen, Turriff
1895 Wilson, Alexander S., 218 Union Street, Aberdeen
1894 Wilson, C. F., 48 Polmuir Road, Aberdeen
1909 Wilson, James (Northern Agricultural Co.), Inverurie
1895 Wilson, Robert M., M.D., Tarty, Ellon
1885 Wilson, William, Coynachie, Gartly
1918 Wilson, William L., of Millmoss, Turriff
1902 Wisely, William, 447 Great Western Road, Aberdeen
1909 Wood, Wm. (Aberdeen Lime Co., Ltd.), Inverurie
1901 Young, George, Greenhall, Insch, Aberdeenshire

BANFF.

1908 Abercromby, Sir George, of Forglen, Bart., Turriff
1893 Allan, George M., of Montbletton, Banff
1900 Anderson, William, M.R.C.V.S., Keith
1893 Beaton, L., Ferry Cottage, Blantyre Street, Cullen
1918 Bremner, William, Newmills of Boyne, Cornhill
1909 Brown, David, Crovie Farm, Gardenstown, Banff
1918 Buie, James, Longmuir, Cornhill
1894 Cameron, George, Bogbain, Keith
1908 Chisholm, John, Banffshire District Asylum, Ladybridge, Banff
1902 Cruickshank, Captain A., Reidhaven Street, Banff
1889 Cumming, J. F., The Dowans, Aberlour-on-Spey
1918 Dawson, John, Auchanachie, Portsoy

Admitted
1893 Donald, George, of Ladyhill, Grange, Keith
1911 Donald, George, jun., Ladyhill, Keith
1880 Duff, Thomas Gordon, of Drummuir, Keith
1918 Duncan, Andrew, Muirake, Cornhill
1918 Duncan, Robert, Muckleton, Cornhill
1904 Edgar, Alexander, Delnashaugh Hotel, Ballindalloch
1888 Edgar, James, The Hotel, Craigellachie
1902 Forbes, Alexander, Rettie, Boyndie, Banff
1912 Forbes, Charles, Upper Dalachy, Banff
1914 Forbes, Henry Newman, Cowhythe, Portsoy
1893 Fortune, John, Broom, Portsoy
1902 Garden, Francis Alexander, of Troup, Banff
1919 Garden, George A., Cleanhill, Buckie
1918 Gillan, George, Auchmillie, Portsoy
1911 Glover, James Y., 1 Vonburgh Place, Keith
1918 Gordon, George, Deskie, Glenlivet, Banff
1898 Grant, George, Glenfarclas, Inveravon, Blacksboat, S.O.
1902 Grant, James, Glenconglass, Tomintoul, Ballindalloch
1902 Grant, John A., Pitglassie, Dufftown
1918 Grant, Robert, Auchorachan, Glenlivet
1910 Grant, William, Arradoul, Buckie
1918 Green, James, Wester Whyntie, Portsoy
1908 Gregor, Provost Robert, Cullen
1899 Greig, John, South Sandlaw, Alvah, Banff
1899 Gunn, Alexander J., Kilnhillock, Cullen
1911 Hay, George Petrie, 74 Mid Street, Keith
1918 Hay, James, Black Culphin, Cornhill
1903 Kynoch, John, W. Isla Bank, Keith
1918 M'Connachie, James C., Baley, Portsoy
1896 Macduff, John, Deanshaugh, Auchlunkart, Keith
1909 Machattie, George, Cattle Dealer, Keith
1891 MacIntosh, William, Fife Estates Office, Banff
1905 Mackay, George, Mains of Tannachy, Port Gordon
1909 Mackenzie, Peter, The Glenlivet Distillery, Glenlivet
1918 MacKessack, James, Tanglin, Portsoy
1912 Mackie, James, M.A., B.Sc., Recletich, Glenrinnes, Dufftown
1907 M'Lean, Donald, Factor, Drumin, Glenlivet, Ballindalloch
1918 M'Lennan, Colin, Leitcheston, Cullen
1918 M'Lennan, James, Redhythe, Portsoy
1908 M'Lennan, William, Bogton, Portsoy
1905 M'Nicol, William, Newtown of Mountblairy, Alvah, Banff.
1912 Maconochie, John, Broomhead, Dufftown, Banffshire
1876 Macpherson, J., Mulben, Keith
1909 M'William, James, Blythstane, Alvah, Banff
1913 Mair, Alexander, Buckpool, Buckie
1918 Mair, John, Mains of Gollachy, Port Gordon
1880 Menzies, W. G. Steuart, Aikenway, Craigellachie
1905 Milne, Lewis, Rannas, Buckie
1909 Mitchell, George, Midtown, Cornhill, Banff
1918 Mitchell, George, Tombreckachie, Glenlivet
1893 Moggach, Joseph, Mains of Towiebeg, Botriphnie, Keith
1907 Morrison, A., Loanhead, Cornhill, R.S.O., Banff
1893 Murray, Alexander, Old Manse, Boyndie, Banff
1918 Murray, John F., Wardend, Banff

Admitted
1909 Napier, Charles, Nether Dalachy, Boyndie, Banff
1873 Ogilvie, A. M., Tillynaught, Portsoy
1908 Rattray, John, Hilton, Buckie
1918 Rattray, Thomas A., Baldavie, Banff
1902 Reid, Alexander, Lagmore, Ballindalloch
1918 Reid, John, Burnside of Enzie, Port Gordon
1905*Richmond and Gordon, The Duke of, K.G., Gordon Castle, Fochabers
1918 Riddoch, John, Barnyards of Badenyouchers, Cornhill
1918 Robb, A. Bannerman, Seafield Street, Portsoy
1895 Robertson, William, Grain Merchant, Banff
1908 Ross, Alexander, Kirkton, Deskford, Cullen
1911 Samson, D. T., Old Cullen, Cullen
1896 Sharp, James D., *last known address*, Sunnyside, Cullen
1918 Sheed, John, Upper Coull, Morauge, Glenlivet
1902 Sim, John, Aberlour Mains, Aberlour
1918 Simpson, George, Ryland, Alvah, Banff
1894 Simpson, Thomas A., Collconard, Banff
1891 Simpson, William, 2 Nelson Terrace, Keith
1918 Simpson, William, 40 Low Street, Banff
1894 Skene, John, Montbletton Lodge, Banff
1918 Smith, Alexander, Bogs, Enzie, Port Gordon
1898 Smith, George, Ordens, Banff
1901 Smith, George, Greenlaw, Alvah, Banff
1918 Smith, John Watt, Knabbygates, Knock
1910 Smith, Sidney, Drummuir, Keith
1908 Stevenson, Douglas Ogilvie, Durn, Portsoy
1918 Stewart, Alexander, Mosstown, Cornhill
1901 Strachan, George, Montcoffer Mains, Banff
1908 Thomson, George D., Kindrought, Portsoy
1918 Thomson, John, Newbigging, Enzie, Port Gordon
1918 Thomson, Robert, Thorneybank, Enzie, Port Gordon
1894 Thomson, William, Tynet Mills, Port-Gordon
1912 Turner, William, Cairnton, Boyndie, Portsoy
1898 Watson, William, Banff Foundry, Banff
1918 Watt, John A., Blairmaud, Cornhill
1918 Weir, Charles S., Jameston, Grange, Keith
1918 Williamson, Isaac, Drum Farm, Keith
1918 Wilson, Alexander, Stonieley, Alvah, Banff
1902 Wilson, George A., Haughs, Keith
1911 Wilson, James, Kilmaichlie, Ballindalloch
1911 Wilson, Walter, Inchgower, Buckie, Banffshire
1918 Wiseman, William, Broomhills, Portsoy

FORFAR

(Eastern District).

1889 Adam, John, Bolshan, Arbroath
1893 Adamson, William S., Careston Castle, Brechin
1902 Adamson, Mrs Nora Jane, Careston Castle, Brechin
1893 Allison, Archibald, Dubton, Brechin
1884 Anderson, D., Blairgowan, Carnoustie
1901 Annand, James M., Knowhead, Brechin
1890 Arnot, David R., Mains of Edzell, Brechin

Admitted
1900 Arnot, David, jun., Hatton Mill, Arbroath
1896 Arnot, William, Fithie, Brechin
1914 Baillie, Robert R. Webster, Panmure Estates' Office, Carnoustie
1909 Barrie, George, Butcher, High Street, Brechin
1876 Bean, George, West Ballochy, Montrose
1911 Blair-Imrie, Major Hew, of Lunan, Forebank House, Brechin
1905 Bowie, Robert Colville (Mains of Kelly), Brookfield, Carnoustie
1908 Cameron, Archibald V., Newton of Stracathro, Brechin
1896 Cameron, John, Westside, Brechin
1902 Campbell, Arch., Gleneffock, Edzell
1887 Campbell, James Morton Peto, of Stracathro, Brechin
1915 Carlyle, John A. (Edinburgh and East of Scotland College of Agriculture), 2 Addison Place, Arbroath
1905 Carnegie, D. C. Rutherford Lindsay, Kinblethmont, Arbroath.
1887 Chalmers, P., Aldbar Castle, Brechin
1880 Chaplin, G. Robertson, Kinnaird Castle, Brechin
1890 Collier, John W., Hatton, Carnoustie
1879 Colquhoun, Dug., Mains of Panmure, Carnoustie
1893 Coupar, Andrew, jun., West Kintrockat, Brechin
1908 Dalhousie, Earl of, Brechin Castle, Brechin
1883 Dowall, J. P., *last known address*, Kelly Bleachfield, Arbroath
1875 Duncan, A. R., Parkhill, Arbroath
1898 Duncan, James, Balfour, Brechin
1884 Fairweather, John, *last known address*, Chapeltown, Brechin
1892 Falconer, James, M.P., Milton of Conon, Carmyllie, Arbroath
1894 Farquhar, Alexander, Careston, Brechin
1894 Ferguson, William, Ironmonger, Brechin
1909 Ferguson, W. H., Swan Street, Brechin
1890 Fleming, Alex., Charleton Mains, Montrose
1901 Fletcher, Donald, Powmill, Brechin
1906 Francis, George A., Seaton Farm, Arbroath
1896 Garden, Norman M'Leod, *last known address*, Dundee
1901 Graham, James, Balcathie, Arbroath
1895 Grant, Colin, Denfield, Arbroath
1900 Grant, G. B. Macpherson, of Craigo, Hillside, Montrose
1901 Grant, George Roger, Auchnacree, Brechin
1902 Gray, Alexander, Agricultural Co., Brechin
1908 Greig, James, jun., Hilton, Fern, Brechin
1919 Greig, William, Seaton House, Arbroath
1903 Henderson, George Thomson, Templewood, Brechin
1905 Henderson, Robert C., Kincraig, Brechin
1902 Howie, Thomas, Beechwood, Arbroath
1896 Hynd, James, Hodgeton, Inverkeilor, Arbroath
1894 Jarron, James Alexander, Rosehill, Arbroath
1894 Johnstone, John, Balnabreck, Brechin
1890 Kydd, James, Scryne, Carnoustie
1909 Low, David, jun., Redhall, Inchbare, Brechin
1902 Low, William, of Balmakewan, Marykirk, Montrose
1895 Lyall, Alexander, of Gardyne Castle, Montrose
1909 Lyall, Herbert, Old Montrose, Montrose

Admitted
1881 M'Corquodale, D. A., Banker, Carnoustie
1869 M'Culloch, R. C., Myerton Villa, Carnoustie
1904 Macdonald, Reginald L., Windmill House, Arbroath
1904 Macdonald, W. K., Town Clerk, Arbroath
1905 M'Nab, John B., Keithock, Brechin
1900 M'Niven, Duncan, Willanyards, Brechin
1893 Middleton, George, *last known address*, Parkconon, Colliston, Arbroath
1894 Milne, George Gardyne, 56 High Street, Montrose
1905 Milne, J. A., of Chapelton of Menmuir, Inchbare, Brechin
1902 Milne, William M., Balbinny, Brechin
1905 Morgan, J. W., Grange of Conon, Arbroath
1905 Moyes, W. C., Renmure, Inverkeilor
1894 Myles, John Blythe, of Balglassie, Brechin
1909 Nicol, William, jun., West Braikie, Montrose
1893 Nicoll, William, jun., The Cross, Carnoustie
1890 Ogilvie, James Swan, Brackenbrae, Broughty Ferry
1890 Ouchterlony, Lt.-Col. T. H., The Guynd, Arbroath
1900 Pattullo, J. H., Pitskelly, Carnoustie
1884 Petrie, David D., 26½ Keptie Street, Arbroath
1900 Reid, Wm. J., Fordhouse of Dun, Montrose
1884 Rodger, George, Waulkmills, Inverkeilor, Arbroath
1882 Rodger, Robert, Mains of Dun, Montrose
1895 Samson, James, Balwyllo, Montrose
1905 Scott, Alexander, Huntlyhill, Brechin
1908 Scott, W. R. Addison, Newton of Arbirlot, Arbroath
1902 Semple, James, Old Downie, Carnoustie
1902 Semple, John L., Haughs of Kinnaird, Brechin
1911 Shanks, James, Dens Iron Works, Arbroath
1895 Sim, John R., Mundamalla, Newtyle, Forfarshire
1896 Smart, Arthur G., Dalbog, Edzell
1895†Southesk, The Earl of, Kinnaird Castle, Brechin
1900 Spalding, William, of Balconnell, Brechin
1915 Spence, Andrew, Commieston, Montrose
1918 Spence, Major David Anderson, V.D., of Conveth Mains, Dunninald Mains, Montrose
1910 Spence, Henry E., Glenskenno, Montrose
1880 Stansfeld, Captain John, Dunninald, Montrose
1902 Stephen, Edward F., Helenslea, Broughty Ferry
1895 Steven, William, Craigmill, Carnoustie
1904 Stewart, David, Chellwood, Monifieth
1900 Stewart, Gordon, East Mains of Keithock, Brechin
1894 Swan, William C., Inverpeffer, Carnoustie
1891 Thom, James H., Westerton of Stracathro, Brechin
1896 Todd, James, Maison-Dieu, Brechin
1894 Watson, William, Boddin, Montrose
1896 Wilson, James A., Arnhall, Edzell
1874 Wood, Chris., St Ann's, Brechin

KINCARDINE.

Admitted
1876 Adam, William, Bush, Banchory-Ternan
1901 Alexander, James, of Bent, Laurencekirk
1902 Alexander, Robert, of Redmyre, Fordoun
1906 Anderson, David, Loirston, Nigg, by Aberdeen
1908 Anderson, James, Pitcarry, Bervie
1894 Annandale, A. B., Bank Agent, Stonehaven
1881†Baird, Sir Alex., of Urie, Bart., Stonehaven
1894 Baird, Henry Robert, of Durris, Drumoak
1902 Blackhall, T. H., *last known address*, Elsick House, Stonehaven
1893 Brown, George T., East Cairnbeg, Fordoun
1910 Brown, William, M.R.C.V.S., Silverbank, Banchory
1894 Burnett, Sir Thomas, of Leys, Bart., Crathes Castle, Aberdeen
1915 Cargill, Charles, Pitarrow Mains, Laurencekirk
1894 Carr, William, East Mains of Barras, Stonehaven
1888 Clinton, Lord, Fettercairn House, Fettercairn
1912 Connon, James B., Solicitor, Stonehaven
1914 Cooper, James, Ley, Banchory-Ternan
1903 Cox, Charles T., Altries, Aberdeen
1899 Crichton, C. M., Kintore Estates Office, Laurencekirk
1896 Duff, Robert W., of Fetteresso, Stonehaven
1902 Duguid, John, Darnford, Durris
1902 Dunbar, John C. F., Factor, Crathes Castle, Crathes
1913 Dykes, J. Alston, Burnton, Laurencekirk
1906 Falconer, William G., Cairnton, Fordoun
1915 Fenton, James H., Kair, Fordoun
1915 Ferrier, John, Mill of Conveth, Laurencekirk
1902 Findlay, James, Hillside House, Portlethen
1918 Fortescue, Miss E. B. Irvine, Craigness, Muchalls
1907 Fortescue, Miss Jessy T. I., Craigness, Muchalls
1884 Fortescue, William I., Kingcausie, Milltimber
1902 Fraser, George, c/o W. Lindsay, Drumsleed, Fordoun
1876 Gladstone, Sir J. R., of Fasque, Bart., Fettercairn
1873 Greig, James Booth, Laurencekirk
1884 Hart, John, Cowie House, Stonehaven
1878 Hay, J. T., of Blackhall Castle, Banchory
1902 Henry, William, Hatton Mains, Montrose
1909 Hird, David, Sauchenshaw, Netherley, Stonehaven
1896 Hird, Samuel, Netherley, Stonehaven
1915 Howie, James M., Clansholm, Laurencekirk
1888 Innes, Rev. W. D., of Cowie, Stonehaven
1903 Ireland, Edwin, Ramsay Arms Hotel, Fettercairn
1908 Japp, Frank, Newton, Laurencekirk
1908 Lees, Ernest A. G., Durris Estate Office, Drumoak
1910 Lindsay, William, Drumsleed, Fordoun
1915 Mackay, John, Thornyhill, Fettercairn
1908 Melvin, William M., Bridge Mill, Laurencekirk

Admitted
1909 Milne, Alexander, Newtonhill Farm, Newtonhill, Stonehaven
1900 Milne, Alexander, Urie Estates Office, Stonehaven
1902 Milne, George, Mains of Barras, Kinneff, Stonehaven
1905 Milne, Robert, Inch of Arnhall, Edzell
1908 Milne, Robert, Wester Durris, Drumoak
1913 Mitchell, A. B. (Craigie & Mitchell), Laurencekirk
1914 Munro, Donald, Ravenswood, Banchory-Ternan
1894 Murray, A. B., New Mains of Urie, Stonehaven
1900 Nicolson, Arthur B., of Glenbervie, Fordoun
1912 Paul, Graham, Spittalmyre, St Cyrus, Montrose
1855 Paul, William, Stranathro Cottage, Muchalls
1878 Porteous, D. S., of Lauriston, Montrose
1914 Pratt, John, The Green, Raemoir, Banchory-Ternan

Admitted
1906 Preddy, Charles A., Arbuthnott House, Kincardineshire
1914 Reid, Alexander, Balbridie, Crathes, Kincardineshire
1900 Reid, James, Easter Tulloch, Laurencekirk
1894 Shaw, Charles, Maidenfold, Maryculter, Aberdeen
1913 Shirras, John, Dewmill House, Auchenblae, Fordoun
1913 Sinclair, Dr William, Kirkhill, Nigg, by Aberdeen
1889 Stewart, Sir David, of Banchory-Devenick, Kincardineshire
1902 Thom, James C., Quithelhead, Crathes, Kincardineshire
1915 Walker, George, Redmoss, Nigg, Kincardineshire
1893 Walker, John Wilson, Kilreen, Stonehaven
1892 Walker, Robt. W., Portlethen, Aberdeen
1915 Watson, John, Whins and Sauchieburn, Luthermuir, Laurencekirk

Number of Members, 649

6.—DUMFRIES DIVISION.

EMBRACING THE

COUNTIES OF DUMFRIES, KIRKCUDBRIGHT, AND WIGTOWN.

DUMFRIES.

Admitted
1895 Adamson, Robert, W.S., Irish Street, Dumfries
1879 Aitken, John M., Norwood, Lockerbie—*Free Life Member*
1910 Allan, Hugh H., Kirkbog, Thornhill
1873 Anderson, James, Stockbridge, Ecclefechan
1873 Anderson, John, Hillside, Moffat
1904 Annandale, William Edwin, Hopsrigg, Langholm
1907 Armstrong, W., Green, Annan
1911 Austin, Robert, Osborne House, Dumfries
1888 Baird, Alexander, Hoddomtown, Ecclefechan
1913 Baird, John, 35 Castle Street, Dumfries
1903 Barbour, John, Bengall, Lockerbie
1895 Beattie, John, Baurch, Rigg, S.O., Carlisle
1893 Beattie, Lewis, Mossknowe, Canonbie
1915 Begg, Henry James, Grain Stores, Lockerbie
1914 Bell, David, Peelhouses, Lockerbie
1886 Bell, George, Minsca, Ecclefechan
1901 Bell, John, Dornock House, Annan
1903 Bell, John, Torbeckhill, Ecclefechan
1906 Bell, John Mackintosh, of Roundstonefoot, Moffat
1910 Bell, Thomas, Fairholm, Lockerbie
1895 Blackley, John, Marchhill, Dumfries
1878 Borland, John, Auchencairn, Closeburn, Thornhill
1903 Borthwick, A. Hay, Caplefoot, Lockerbie
1895 Broatch, George, Justinlees, Annan
1910 Brook, Charles, of Kinmount, Annan
1895 Brook, E. J., of Hoddom, Hoddom Castle, Ecclefechan
1902 Brown, David, Stepford, Holywood, Dumfries
1886 Brown, James, Burnside, Auldgirth, Dumfries
1908 Brown, James, Jaarbruck Lodge, Thornhill
1902 Brown, John, *last known address*, Threerofts, Dumfries
1899 Brown, Joseph, Holestane, Thornhill
1910 Brown, Ralph, Ladyland, Preston Mill, Dumfries
1886 Brown, Stephen, Boreland, Lockerbie
1877 Brown, T. M., Closeburn Castle, Thornhill
1911 Brown, William, Roberthill, Lockerbie
1870 Bruges, Edward C., Archbank, Moffat
1895 Burnie, William, Penlaw, Lockerbie
1910 Campbell, David W., Breckonhill, Lockerbie

Admitted
1910 Carlyle, James, Dunnabie, Waterbeck, Ecclefechan
1903 Carlyle, Thomas R., Waterbeck, Ecclefechan
1886 Carmont, James, British Linen Bank, Dumfries
1896†Carruthers, Lieut.-Col. F. J., of Dormont, Lockerbie
1895 Carruthers, William R., Stenrieshill, Wamphray, Beattock
1919 Carson, John (John Poynter, Son, & M'Donalds), 18 Bank Street, Dumfries
1903 Chapman, Andrew, Dinwoodie Lodge, Lockerbie
1903 Charlton, James, Huntingdon, Dumfries
1915 Cochrane, James, Broomhills, Lockerbie
1907 Colston, William G., Rosemount, Lockerbie
1903 Cowan, Ronald L., Hallguards, Ecclefechan
1897 Crabbe, Major, Duncow, Dumfries
1899 Craig, Edward J., The Burn, Thornhill
1910 Crawford, Hugh, Wintersheugh, Annan
1910 Crawford, Robert, West Gallaberry, Dumfries
1895 Crawford, William, Broadchapel, Lochmaben
1910 Critchley, Major Edward Asheton, Stapleton Tower, Annan
1909 Cromar, Napier, Upper Locharwoods, Ruthwell
1903 Crosbie, John, Chapelhill, Caerlaverock, Dumfries
1899 Cross, M. M., Annan
1895 Dalgleish, Robert, Brandleys Sanquhar
1903 Dalgleish, Robert, Ulzieside, Sanquhar
1903 Dickie, David, Tower, Sanquhar
1912 Dickie, William, South Cowshaw, Lochmaben
1914 Dickson, Thomas, Braehead Farm, Dumfries
1910 Dobie, William, Broombush, Lockerbie
1903 Donaldson, Thomas, Sarkshields, Ecclefechan
1910 Douglas-Menzies, Norman E., Newtonairds, Dumfries
1907 Duff, Thomas, 80 High Street, Annan
1893 Duncan, John Bryce, Newlands, Dumfries
1877 Farish, Samuel T., Todhillmuir, Lockerbie
1877 Farish, William R., Langlands, Dumfries
1914 Ferguson, William, Catlins, Lockerbie
1903 Fleming, James, of Woodhouse, Ecclefechan

Admitted
1904 Fleming, John, Crowdieknowe, Ecclefechan
1910 Fleming, William, Meinfoot, Ecclefechan
1884 Fletcher, D. M., Battlehill, Annan
1914 Forsyth, John, Stapleton Grange, Dornock, Annan
1872 Galbraith, William W., Shinnelwood, Tynron, Thornhill, Dumfries
1904 Gibson, Thomas, Auchencrieff, Dumfries
1884 Gillespie, William, *last known address*, Alton, Moffat
1913 Gladstone, Hugh S., of Capenoch, Thornhill
1895 Gordon, H. S., Glenae, Amisfield, R.S.O.
1895 Gourlay, Francis N. M., Milnton, Tynron, Thornhill
1915 Graham, Robert, Chapel of Logan, Half-Morton, Canonbie
1903 Graham, Thomas, Mouswald Grange, Ruthwell, R.S.O.
1895 Graham, William, Harlawhill, Canonbie
1895 Grierson, John, Town Clerk, Dumfries
1872 Grieve, Archibald, Albierigg, Canonbie
1896 Grossart, Robert F., M.R.C.V.S., Milton, Beattock
1915 Henderson, John, Annandale Estates Office, Moffat
1906 Hill, Basil H., Archbank, Moffat
1898 Home, J. H. Milne, Irvine House, Canonbie, N.B.—*Free Life Member*
1895 Hotson, Ninian Wilson, Bankside, Lockerbie
1907 Howat, Jaspar F., Kirkbank, Dumfries
1910 Hunter-Arundell, H. W. F., Barjarg Tower, Auldgirth
1895 Hyslop, Peter, Annan
1895 Irvine, Wm., Job and Postmaster, Dumfries
1895 Irving, David A., Cowburn, Lockerbie
1883 Irving, D. J. Bell, Whitehill, Lockerbie
1904 Irving, Francis, Pennersaughs, Ecclefechan
1885 Irving, H. C., of Burnfoot, Ecclefechan
1895 Irving, John, Rhone Villa, Gretna, Carlisle
1895 Irving, John Bell, of Milkbank, Lockerbie
1905 Jackson, Stanley, Moniaive (Larchmont, Troon)
1895 Jackson, Thomas, 24 Brewery Street, Dumfries
1895 Jardine, David Jardine, of Jardine Hall, Lockerbie
1895 Jardine, Robert, 37 High Street, Lochmaben
1893† JARDINE, Sir Robert W. Buchanan, of Castlemilk, Bart., Lockerbie
1890 Jeffrey, John J., Arthurs Place, Lockerbie—*Free Life Member*
1903 Johnson-Ferguson, A., yr. of Springkell, Ecclefechan
1903 JOHNSON-FERGUSON, Sir J. E., of Springkell, Bart., Ecclefechan
1895 Johnston, Archibald F. Campbell, *last known address*, Carnsalloch, Dumfries
1898 Johnston, Wm., of Amisfield, Dumfriesshire (81 Hope Street, Glasgow)
1914 Johnstone, James, Burrance, Lockerbie
1910 Johnstone, John, of Halleaths, Lockerbie
1881 Johnstone, Michael, Alton, Moffat

Admitted
1910 Johnstone, William, Whitesands, Dumfries
1906 Kennedy, James D., Castlehill, Dumfries
1908 Kennedy, William, Luce Mains, Ecclefechan
1903 Kerr, William, Old Graitney, Gretna
1910 Kerss, John S., Hope Cottage, Ruthwell
1910 Keswick, Henry, of Cowhill Tower, M.P., Dumfries
1892 Kirkpatrick, Andrew, Longbridgemuir, Ruthwell
1910 Kirkpatrick, James A., Longbridgemuir, Ruthwell
1910 Kirkpatrick, William, Longbridgemuir, Ruthwell
1907 Kirkpatrick, William, Auctioneer, Annan
1902 Landale, Napier, Woodbank Hotel, Dumfries
1903 LAURIE, Colonel Sir C. V. E., yr. of Maxwellton, Bart., D.S.O., Maxwelltown House, Thornhill, Dumfriesshire
1884 Lawrie, John P., Shieldhill, Lochmaben
1895 Lindsay, James, V.S., Whitesands, Dumfries
1895 Lindsay, William, West Roucan, Dumfries
1910 Little, James, Craig, Westerkirk, Langholm
1888 Little, Murray, Summerhill, Annan
1895 Little, William, Rivox, Moffat
1895 Lorimer, William, Raecleugh, Moffat
1895 Lyon, J. Stewart, of Kirkmichael, Jessfield, Amisfield
1910 M'Alister, A. W., Seedsman, Dumfries
1910 Macara, Graham F., Grain Merchant, Moniaive
1899 M'Call, Thomas, Johnstone Place, Lockerbie
1895 M'Call, William, of Caitloch, Moniaive
1913 M'Cartney, William Murdoch, Lochbrow, Lockerbie
1907 M'Clure, James, Clydesdale Bank, Lockerbie
1911 M'Connel, James Irving, of Eliock, Sanquhar
1895 Macdonald, J. C. R., W.S., Dumfries
1893 Macdonald, Major William Bell, of Rammerscales, Lockerbie
1878 Macfarlan, George, Closeburn Mains, Thornhill
1908 M'Glasson, Miles W. M., Estate Office, Dabton, Thornhill
1900 MacGregor, Peter, Factor, Springkell, Ecclefechan
1895 M'Intosh, John S., 8 Seafield Road Dumfries
1887 M'Jannet, F. G., *last known address*, Gateslack, Thornhill
1888 M'Jerrow, David, Solicitor, Lockerbie
1894 M'Jerrow, James Ewart, Fairfield, Lockerbie
1910 M'Kerrow, William, Broomhill, Lochmaben
1914 MacKillop, James, Park House, Ecclefechan
1895 M'Millan, John J., Glencrosh, Moniaive
1895 M'Millan, Robert, of Holm of Dalquhairn, Woodlea, Moniaive
1895 M'Millan, Thomas, Glencrosh, Moniaive
1890 Martin, J. C., of Netherwood, Dumfries
1913 Mather, William, Dinwoodie Mains, Lockerbie
1889 Maxwell, Charles H., of Dalruscan, Dumfries

Admitted
1900 Maxwell, R. N., Parkgate, Annan
1900 Maxwell, Wellwood Hyslop, Steilston House, Dumfries
1911 Medlock, Fred. W., County Buildings, Dumfries
1911 Meisegaes, Ary, Longwood, Langholm
1910 Millar, John E., Enzieholm, Langholm
1896 Millar, William J., Engineer, Annan
1910 Milligan, Fergus J. D., Merkland, Auldgirth
1895 Milligan, George F., Burnmouth, Thornhill
1904 Milligan, Samuel, M.A., B.Sc., Langlands, Dumfries
1886 Milne, Thomas, Grain Merchant, 18 Livingstone Place, Lockerbie
1908 Mitchell, H. N., Kirklands, Kirkconnel
1895 Moffat, Francis, Craigbeck, Moffat
1893 Moffat, James, Gateside, Sanquhar
1883 Moffat, William, Garwald, Langholm
1895 Moffat, W. Kennedy, of Auchencheyne, Moniaive
1910 Moffat, Captain W. M., Merlewood, Hamilton Place, Moffat
1903 Morton, Hugh, Kirkhill, Wamphray, Beattock
1910 Morton, John, Lamonbie, Lockerbie
1895 Murray, John, Castlemilk Mill, Lockerbie
1914 Murray, J. Herbert, Kirkland, Closeburn, Dumfriesshire
1893 Murray, William, Kirkland, Closeburn
1900 Murray, William, M.P., of Murraythwaite, Ecclefechan
1910 Nicol, Robert P., Newfield, Ecclefechan
1890 Osborne, Robert, Morton Mains, Thornhill
1910 Paterson, J. Jardine, of Brocklehirst, Ruthwell
1914 Paterson, James, Roundstonefoot, Moffat
1908 Paterson, James J., Terrona, Langholm
1905 Paterson, James S., Quhytewoollen, Lockerbie
1903 Paterson, Robert, Holms, Beattock
1900 Paterson, Robert Jardine, of Balgray, Lockerbie
1910 Paterson, William, Holmhead, Mouswald, Ruthwell
1885 Paterson, William E., Craigdarroch, Sanquhar
1884 Pearson, A. G., of Luce (49 Mardale Crescent, Edinburgh)
1910 Penman, Andrew C., Motor Builder, Dumfries
1884 Primrose, John, Solicitor, Dumfries
1895 Primrose, Robert, *last known address*, Kirkbog, Thornhill
1892 Ralston, Charles W., Dabton, Thornhill
1895 Rankin, John S., Waulkmill, Thornhill
1895 Reid, James S., Westwood, Dumfries
1895 Richardson, James, Boreland, Caerlaverock, Dumfries
1884 Richardson, William, Garpel, Lochmaben
1895 Richardson, William, *last known address*, Douglas Lodge, Moffat
1917 Robinson, Joseph, Cereal House, Annan
1917 Robinson, Robert, Cereal House, Annan
1893 Robson, John, County Buildings, Dumfries
1884 Roddick, Frank, Trailtrow, Ecclefechan
1899 Roedemer, Charles Stewart, *last known address*, Netherton House, Troqueer, Dumfries

Admitted
1895 Rutherford, John, M.P., Summerhill, Annan
1908 Scott, John, Broom, Lockerbie
1893 Scott, William Black, Alison's Bank, Gretna
1903 Scrimgeour, James, Mainholm, Hoddom, Ecclefechan
1910 Slack, John, Tanlaw Hill, Boreland, Lockerbie
1910 Sloan, Alexander, Georgefield, Langholm
1919 Sloan, George, Bush of Craigs, Dumfries
1907 Sloan, Mungo, Douglashall, Ecclefechan
1918 Sloan, William, Shawsmuir, Closeburn, Thornhill
1911 Smith, Fred. J., Corsebank, Sanquhar
1895 Smith, Matthew, Netherholm, Kirkmahoe
1895 Steel, Arthur Jackson, of Kirkwood, Lockerbie
1895 Steel, James, 23 Catherine Street, Dumfries
1910 Steel, William, Shortrig, Ecclefechan
1869 Stewart, D. W., Annan Lea, Moffat
1886 Stobo, James, Halliday Hill, Auldgirth
1912 Stobo, Thomas, of Kilroy, Auldgirth Dumfries
1903 Symington, Archibald, of Allanton, Auldgirth
1886 Symons, John, Solicitor, Dumfries
1910 Thomson, J., Auctioneer, Annan
1879 Tod, William, Halleaths Farm, Lochmaben
1884 Todd, John, *last known address*, Tinwald Shaws, Dumfries
1902 Urquhart, Joseph, Preston Hall, Annan
1894 Vivers, William, Dornocktown, Annan
1895 Walker, Captain George Laurie, of Crawfordton, Thornhill
1886 Wallace, James R. W., Auchenbainzie, Thornhill
1889 Wallace, John William, Ford, Thornhill
1885 Wallace, S. Williamson, Kelton, Dumfries
1906 Weir, James, Over Courance, Lockerbie
1914 Weir, James, Drumcruicton, Thornhill, Dumfriesshire
1886 Whitelaw, James W., Solicitor, Dumfries
1896 Will, George, Crichton Royal Institution, Dumfries
1895 Williamson, Ninian Alex., of Carzield, Kirkmahoe, Dumfries
1913 Wilson, Andrew, Esbie, Lochmaben
1900 Wilson, James, Tundergarth Mains, Lockerbie
1895 Wilson, John, Boghead, Dumfries
1878 Wilson, P. M'C., Muirside, Holywood, Dumfries
1877 Wright, Thomas, Gowanlea, Holywood
1903 Wyllie, James, Bankhead, Lochmaben
1895 Wyllie, James, Grain Merchant, Elmbank, Dumfries
1895 Young, Homer, Redhills, Dumfries
1910 YOUNGER, Sir William, Bart., Auchen Castle, Moffat

KIRKCUDBRIGHT.

1895 Allan, Robert, Howwell, Kirkcudbright
1894 Armitage, Arthur Calrow, of Kirroughtree, Newton-Stewart
1904 Armstrong, Robert, Littleton, Gatehouse

Admitted
1914 Bain, Coll Macdonald, Auchengibbert, Crocketford, Dumfries
1889 Barbour, William, Strathdee, Kirkcudbright
1884 Barrowman, John H., Corrahill, Kirkcudbright
1907 Biggar, Walter, Grange Farm, Dalbeattie
1886 Biggar, William, Corbieton, Castle-Douglas
1903 Bone, James, Brooklands, Crocketford, Kirkcudbright
1878 Bramwell, John, Cornwall Park, Newton Stewart—*Free Life Member*
1903 Brown, James, of Knockbrex, Kirkcudbright (Longfield, Heaton Mersey, Manchester)
1910 Brown, John T., Hermitage, Dalbeattie
1910 Brown, Robert, Blairshinnoch, Dumfries
1903 Brown, William, of Netherlaw, Kirkcudbright
1919 Bryson, George, Boreland, Parton, Kirkcudbrightshire
1892 Caird, James Alexander Henryson Caird, of Cassencary, Creetown
1895 Callander, Gavin, Palmerston Iron Works, Dumfries
1885 Campbell, Robert J., Cuil, Castle-Douglas—*Free Life Member*
1903 Campbell, Wm. George, High Borgue, Twynholm, Castle-Douglas
1879 Cannon, James, Crown Place, Castle-Douglas—*Free Life Member*
1895 Clark, William, Whiteyard, Lochfoot, Dumfries
1903 Coats, W. A., of Dalskairth, Dumfries
1903 Cochrane, William, jun., Torrorie, Preston Mill, Kirkbean, Dumfries
1899 Corrie, Thomas, Southpark, Kirkcudbright
1913 Cranstoun, J. G. M., Nunland, Dumfries
1894 Crawford, Hugh W. B., Chapmanton, Castle-Douglas]
1889 Cunningham, John, Tarbreoch, Dalbeattie
1899 Dempster, John, jun., Herriesdale, Dalbeattie
1895 Douglas, John, Barstibly, Castle-Douglas
1895 Douglas, Thomas, Lochdougan, Castle-Douglas
1878 Douglas, William D. R., of Orchardton, Castle-Douglas
1903 Dudgeon, Cecil Randolph, Cargen Holm, Dumfries
1877 Dudgeon, Colonel R. F., C.B., of Cargen, Dumfries
1903 Dudgeon, Robert Maxwell, Cargen, Dumfries
1910 Dunbar, Captain Sir Charles Dunbar Hope, of St Mary's Isle, Kirkcudbright
1903 Dunbar, Lieut.-Colonel Robert Lennox Nugent, of Machermore, Newton-Stewart
1889 Duncan, James, East Glenarm, c/o R. Jackson, Bankend, Caerlaverock, Dumfries
1906 Dunlop, George, Craigraploch, Kirkcudbright
1884 Dunlop, Captain H. L. Murray, of Corsock, Dalbeattie
1895 Edgar, James, Kelton Mains, Castle-Douglas
1895 Fraser, Hugh, Auchenhay, Corsock, Dalbeattie
1893 Galbraith, Charles E., Terregles, Dumfries

Admitted
1915 Gardener, John, Upper Rusko, Gatehouse
1914 Gilchrist, Miss, Thorniehill, Balmaclellan
1882 Gillespie, Denholm, Park Hall, Maxwelltown, Dumfries
1910 Gillespie, Douglas, Factor, Castle-Douglas
1888 Gillespie, William, Solicitor, Castle-Douglas
1886 Gilmour, W. P., Balmangan, Kirkcudbright
1885 Gordon, Edward, Dunjop, Castle-Douglas
1877 Gordon, James, Castle-Douglas
1904 Graham, John, Barharrow, Gatehouse
1895 Graham, Robert, Auchengassel, Twynholm
1878 Gray, Adam, Ingleston of Borgue, Kirkcudbright
1915 Gray, Adam, junr., Ingleston, Borgue, Kirkcudbright
1876 Hayman, John, Queenshill, Ringford
1910 Henryson-Caird, Captain Alister James, yr. of Cassencary, Creetown
1895 Herries, William D. Y., of Spottes, Dalbeattie
1884 Hood, William, Balmae, Kirkcudbright
1887 Hope, Captain Thomas, Summerhill, Dumfries
1914 Houston, David, Overlaw, Kirkcudbright
1869 Hume, A., Auchendolly, Dalbeattie
1907 Hunter, Robert, Woodside, Kirkbean, Dumfries
1880 Hutchison, Graham, of Balmaghie, Castle-Douglas
1904 Hutchison, James Laurie M'Kie, of Edingham, Dalbeattie, *last known address*, Hillowton, Castle-Douglas
1914 Johnstone, Henry, Bridge Street, Kirkcudbright
1878 Kennedy, J. M., of Knocknalling, Dalry, Galloway
1895 Kirkpatrick, Thomas, Ewanston, Moniaive
1878 Kirwan, L. M., Collin, Auchencairn
1891 Kirwan, Major W. F. Maitland, *last known address*, Gelston, Castle-Douglas
1883 Laidlay, R. W., c/o Tods, Murray, & Jamieson, W.S., 66 Queen Street, Edinburgh
1895 Lusk, Matthew C., Airieland, Castle-Douglas
1906 M'Adam, James, Craigley, Castle-Douglas
1911 MacAlister, Neil H., M.R.C.V.S., 43 St Cuthbert Street, Kirkcudbright
1878 M'Conchie, John, Mossyard, Gatehouse
1895 M'Dowall, John, of Girdstingwood, Kirkcudbright
1893 M'Geoch, Thomas, Barncaughlaw, Newton-Stewart
1909 M'Gill, David, Hillowton, Castle-Douglas
1904 M'Kerrow, Charles Samson, Boreland of Southwick, Dumfries
1876 M'Kerrow, M. S., Burnock, Dumfries
1878 M'Kie, John, of Ernespie, Castle-Douglas
1910 M'Myn, Joseph G., Kirkhouse, Kirkbean, Dumfries
1897 M'Queen, James, of Crofts, Dalbeattie
1878 M'Turk, W. A., Barlae, Dalry, Galloway
1910 Maxwell, Robert, Terregles Banks, Dumfries

Admitted
1886 MAXWELL, Sir W. F., of Cardoness, Bart., Gatehouse
1878 Maxwell, W. J., Terregles Banks, Dumfries
1873† Maxwell, W. J. H., of Munches, Dalbeattie
1879 Maxwell, Wellwood, of Kirkennan, Dalbeattie
1886 Maxwell, Wellwood, *last known address*, of The Forest, New Galloway
1904 Miller, John Richard, Mid-Kelton, Castle-Douglas
1903 Milligan, J. E., Solicitor, Dalbeattie
1907 Montgomery, Andrew Mitchell, of Netherhall, Castle-Douglas
1878 Montgomery, William, Banks, Kirkcudbright
1914 Montgomery, Wm., jun., Banks, Kirkcudbright
1915 Muirhead, Hugh, Glenlair, Dalbeattie
1879 Murray, G. R., of Parton, Castle-Douglas
1914 Neilson, J. Beaumont, Greenlaw, Castle-Douglas
1895 Neilson, John, of Mollance, Castle-Douglas
1899 Neilson, W. Montgomerie, of Queenshill, Ringford, Kirkcudbrightshire
1878 Ovens, Walter, Torr House, Castle-Douglas
1903 Parker, Hugh, Boreland, Castle-Douglas
1899 Phillipps, Charles Aldcroft, of Dildawn, Castle-Douglas
1895 Phillips, James, Carse, Kirkcudbright
1905 Picken, James, Milton, Kirkcudbright
1913 Picken, James, Torr's Farm, Kirkcudbright
1903 Robb, Thomas, Sheep-dealer, Castle-Douglas
1903 Russell, George, Newton, Dumfries
1902 Saunders, A. W., Dromore, Kirkcudbright
1883 Shennan, R., Balig, Kirkcudbright
1912 Shepley-Shepley, Robert, Troquhain, Balmaclellan
1911 SINCLAIR, Master of, Milton Park Lodge, Dalry, Galloway
1913 Slater, John, Grange Farm, Kirkcudbright
1913 Slater, Thomas, Hartburn Farm, Kirkcudbright
1903 Sloan, William, Larg Farm, Creetown
1908 Smith, J. Aikman, C.A., Argrennan, Castle-Douglas
1882 Smith, James, Twynholm Mains, Twynholm
1895 Sproat, George G. B., Boreland, Gatehouse
1870 Sproat, Robert, c/o W. G. Campbell, High Borgue, Twynholm
1878 Sproat, W. T., Borgue House, Kirkcudbright
1913 Stewart, Thomas, Lochill Farm, Ringford, Kirkcudbright
1905 Syminton, David, Kirkcarswell, Dundrennan, Kirkcudbright
1919 Taylor, William, Edingham, Dalbeattie
1886 Timms, H. A., of Slogarie, New Galloway
1904 Turner, Fred. J., Cally Estate Office, Gatehouse-of-Fleet
1895 Veitch, David Y., Low Creoch, Gatehouse
1907 Wallace, James, Chapelhill, Kirkcudbright
1879 Wallace, J., Foundry, Castle-Douglas
1886 WALLACE, Sir M. G., Terreglestown, Dumfries
1879 Wallace, R., Foundry, Castle-Douglas

Admitted
1910 Wallet, David, Crown Hotel, Castle-Douglas
1895 Wallet, William, Auction Mart, Castle-Douglas
1910 Wands, William, Earlstoun, Dalry
1910 Weeks, Captain F. Wickham, Barholm House, Creetown
1913 Weir, John, Midtown Farm, New Abbey, Dumfries
1895 Wilson, Alexander, Sandside, Dumfries
1910 Wilson, John M'G., Cairnholy, Creetown
1914 Young, Arthur, Garroch, New Galloway, Kirkcudbrightshire (26 Hans Court, London, S.W.)

WIGTOWN.

1893 Adair, John, Springbank, Stranraer
1903 Adair, Percy J., Solicitor, Stranraer
1898 AGNEW, Sir Andrew Noel, of Lochnaw, Bart., Stranraer
1903 Agnew, John Lockhart, Balwherrie, Leswalt
1913 Allan, Andrew, Appleby Farm, Whithorn
1906 Anderson, James, Inchparks, Stranraer
1893 Anderson, John, Drummoral, Isle of Whithorn
1878 Anderson, Robert, Balgreggan, Stranraer
1903 Barbour, John, Auchneight, Drummore, Stranraer
1893 Bennoch, James, Whitepark, Stranraer
1893 Bennoch, John, Solicitor, Stranraer
1896 Black, John, British Linen Bank, Wigtown
1906 Brebner, R. F., Crecy House, Isle of Whithorn
1895 Caldwell, Hugh, Culhorn Parks, Stranraer
1909 Campbell, William, Chapel Outen, Whithorn
1903 Chalmers, Hugh, Chlenry, Castle-Kennedy
1897 Chalmers, John, Freugh, Stoneykirk
1893 Christison, James, Barglass, Kirkinner
1903 Cochran, Andrew, High Ardwell, Kirkcolm
1893 Cochran, George, North Cairn, Kirkcolm
1877 Cochran, Robert, Caldons, Stoneykirk
1893 Cochran, Robert, Portencallie, Kirkcolm
1895 Crawford, Archibald, Broughton Mains, Sorbie
1895 Douglas, John, High Balyett, Stranraer
1893 Drew, James Lawson, Doonhill, Newton-Stewart
1915 Drynan, John, Knockiebay, New Luce
1911 Edgar, Alexander, Chapelheron, Whithorn
1893 Findlay, Francis, Drumbreddan, Ardwell, Stranraer
1903 Findlay, John Steel, Drumbreddan, Ardwell, Stranraer
1903 Findlay, William, Drumbreddan, Ardwell, Stranraer
1919 Fletcher, Henry G., "Galloway," Stair Drive, Stranraer
1914 Forster, John, Mains of Larg, New Luce
1878 Forsyth, John, Reiffer Park, Sorbie
1903 Forsyth, John, Valleyfield, Kirkcolm
1910 Gillespie, William James, South Barsalloch, Port William
1903 Hamilton, Hugh, jun., 7 Bridge Street, Stranraer

Admitted
1903 Hamilton, James, Penkiln, Garliestown
1903 Hamilton, Major William M. Fleming, of Craighlaw, Kirkcowan
1895 Hewetson, John, Baltersan, Newton-Stewart
1895 Hewetson, Robert, Upper Barr, Newton-Stewart
1911 Hill, Peter, Baltier, Whithorn
1877 Hughan, Peter H., Cults, Whithorn
1913 Hunter, George, Galloway Estate Office, Newton Stewart
1895 Hunter, Stephen, Whiteleys, Stranraer
1888 Hunter, William, Garthland Mains, Stranraer
1895 Hutchison, John, Drummore, Kirkmaiden
1919 Hyslop, Gilbert M., Craighlaw Mains, Kirkcowan
1893 Kerr, Hugh, West Galdenoch, Stoneykirk
1910 Laird, Andrew, Torhousekie, Wigtown
1903 Lamb, Robert, Burnbank, Lochans, Stranraer
1897 Laughton, John, Logan Estates Office, Chapel Rossan, Stranraer
1914 MacCaig, Alex. Neilson, Challoch, Leswalt, Stranraer
1888 M'Caig, John, of Belmont, Stranraer
1903 M'Camon, John, Barnhills, Kirkcolm
1892 M'Clean, James Auchneal, Stranraer
1892 M'Clelland, Andrew, Glenturk, Wigtown
1897 M'Conchie, William, Mains of Penninghame, Newton-Stewart
1914 M'Connell, James, Boreland, Whauphill, Wigtownshire
1878 M'Connell, Thomas M., V.S., Wigtown
1893 M'Creath, Thomas, Skaith, Newton-Stewart
1899 M'Douall, Andrew Kenneth, of Logan, Stranraer
1904 M'Douall, Nigel Douglas, Logan, Stranraer
1911 M'Dowall, Andrew, of Changue, Port William
1915 M'Dowall, George, Glenhowl, Glenluce
1878 M'Dowall, R., Auchengallie, Port William
1911 MacFadyen, Neil, Mark of Shennanton, Kirkcowan
1893 M'Gill, Andrew, Kildonan, Stoneykirk
1895 M'Gill, John, National Bank of Scotland, Newton-Stewart
1895 M'Harrie, Stair, Rephad, Stranraer
1915 M'Ilwrick, Alexander, Balmurrie, New Luce
1915 M'Ilwrick, Gilbert, Miltonise, Glenwhilly, Wigtownshire
1900 M'Intyre, James, Logan Mains, Ardwell
1880 M'Keand, P., of Airlies, Whauphill
1893 M'Lean, Charles Arbuthnot, Solicitor, Wigtown

Admitted
1910 M'Master, James, Auchleand, Wigtown
1875 M'Master, William, Challoch, Dunragit
1908 M'Neill, Alex. Henry, Carseriggan, Kirkcowan
1915 M'Neil, William L., of Shennanton, Kirkcowan
1905 Marshall, Albert James, Bridgebank, Stranraer
1896 Marshall, J., jun., Drummore, Stranraer
1885 Marshall, Mathew, Bridgebank, Stranraer
1878 Matthews, A. B., British Linen Bank, Newton-Stewart
1910 Matthews, John Gordon, Orchardton, Garlieston
1877†Maxwell, Sir H. E., of Monreith, Bart., D.C.L., LL.D., F.R.S., Whauphill
1887 Menzies, W. M., Factor, Ardwell, Stranraer
1895 Morrison, David, Boreland, Kirkcowan
1895 Morrison, D. William, Derry, Newton-Stewart
1896 Murray, John, Kilfillan, Glenluce
1893 Nicholson, Andrew, Kidsdale, Whithorn
1893 Niven, John F., Mahaar, Kirkcolm
1903 Parker, John, Balyett, Stranraer
1895 Paton, Robert, Mains of Airies, Ervie, Stranraer
1914 Purves, James, Estates Office, Dunskey, Portpatrick
1914 Ralston, J. L., Milmain, Stoneykirk
1897 Ritchie, John, Lochans Mill, Lochans
1893 Robertson, James, Low Craichmore, Leswalt, Stranraer
1895 Robertson, John, Galloway Estates Office, Newton Stewart
1906 Rodan, John Miller, Mill Bank, Glenluce
1903 Routledge, Joseph, Barsalloch, Port William
1893 Shaw, David Burnie, Garlieston
1904 Sproat, Wm., North Balfern, Kirkinner
1910 Stair, the Earl of, Lochinch, Castle-Kennedy Station
1869†Stewart, Sir Mark J. M'T., of Southwick, Bart., Ardwell
1893 Taylor, Peter, Crews, Glenluce
1898 Thorburn, John, Port-of-Spittle, Stoneykirk
1893 Tully, William, Colfin, Stranraer
1903 Walker, H. H., Monreith Estate Office, Whauphill
1907 Wallace, John A. A., of Lochryan, Cairnryan, Stranraer
1917 Whyte, John M. H., Kirkmabreck, Sandhead, Stranraer
1894 Wither, Thos., Awkirk, Stranraer
1911 Wyllie, John H., The Creamery, Dunragit

Number of Members, 496.

7.—INVERNESS DIVISION.

EMBRACING THE

COUNTIES OF CAITHNESS, ELGIN, INVERNESS, NAIRN, ORKNEY AND SHETLAND, ROSS AND CROMARTY, AND SUTHERLAND.

CAITHNESS.

Admitted
1913 Alexander, William A., Ruther, Watten
1900 Baird, Colonel E. W., Forse House, Latheron
1901 Barnetson, Benjamin, Milton, Wick
1912 Barnetson, James, Clayock House, Halkirk, Caithness
1911 Barnetson, William A., Clayock House, Halkirk, Caithness
1901 Budge, James, Barnyards, Wick
1909 Campbell, A. D., Stanstill, Wick
1901 Clyne, Alexander, of Tister, Bower, Caithness
1910 Clyne, George, Noss Farm, Wick
1908 Coghill, Donald, Hillhead, Wick
1901 Davidson, Charles, Coggle, Watten, Caithness
1919 Davidson, George, B.Sc., Cogle, Watten, Caithness
1901 Davidson, James J. C., West Watten, Watten
1912 Davidson, J. H. M., Buckies, Thurso
1901 Dunnet, Alexander, Joiner, Bower, Wick
1894 Dunnet, Alexander, Upper Gillock, Wick
1894 Ferrier, James, Ackergill Mains, Wick
1905 Finlayson, Peter, West Greenland, Castletown, Thurso
1902 Gunn, David, Murkle Estates Office, Thurso
1909 Gunn, George, Skaill, Dounreay, Thurso
1911 Gunn, James William, Banniskirk, Halkirk
1911 Gunn, John S., Banniskirk, Halkirk
1883 Henderson, David P., of Stemster, Halkirk
1883 Henderson, Colonel J. H., Bellevue, Wick
1881 Horne, Edward William, of Stirkoke, Wick
1892 Innes, Donald, Borlum, Reay, Thurso
1901 Keith, Peter, Ulbster Estates Office, Thurso
1899 King, George, Berriedale, Caithness
1905 Mackay, Donald, Freswick Estates Office, Thurso
1911 Mackay, George M., Steam Mills, Wick
1901 Mill, Peter, Achscrabster, Thurso
1894 Morris, Robert, Reis Lodge, Wick
1908 Morris, William, Olrig Mains, Caithness
1912 Mowat, John A., Auctioneer, Lybster, Caithness
1911 Murray, Donald C., Castletown, Caithness
1901 Nicholson, Alexander, East Murkle, Thurso
1912 Oliver, John, 20 Princes Street, Thurso
1881*† PORTLAND, His Grace the Duke of, K.G., Langwell, Wick
1911 Purves, James, Thurdistoft, Castletown, Caithness

Admitted
1912 Robertson, J. J., Bridge Street, Wick
1906 Robson, John, jun., Lynegar, Watten, Caithness
1911 Sinclair, A. F., Achinabest, Reay, Caithness
1900 Sinclair, Donald, Implement Maker, Wick
1901 Sinclair, Donald, Stempster, Westfield, Thurso
1886 SINCLAIR, Sir John R. G., of Dunbeath, Bart., Barrock House, Wick
1876 Sutherland, Alexander, Rampyards, Watten—*Free Life Member*
1907 Waters, Donald, Lochend Farm, Barrock, Thurso
1901 Younger, Alexander, Hoy, Castletown, Caithness

ELGIN.

1901 Adam, Alexander, Kinneddar, Lossiemouth
1889 Adam, John, Coulardbank, Lossiemouth
1908 Allan, D. M., Ballintomb, Grantown-on-Spey
1910 Allan, Peter, Earlsmill, Brodie, Forres
1911 Allan, William, Level, Longmorn, Elgin
1911 Anderson, William, Mains of Burgie, Forres
1899 Anderson, William, Wester Manbeen, Elgin
1901 Black, W. Rose, Town and County Bank, Elgin
1911 Brodie of Brodie, Brodie Castle, Forres
1893 Brown, James, Burnside, Fochabers
1895 Brown, James Paterson, Dipple, Fochabers
1908 Bruce, Charles Minto, Burgie Lodge Farm, Forres
1878 Bruce, D. C., Byres, Fochabers
1911 Bruce, John William, Bogs of Blervie, Forres
1868 Bruce, Robert, Firlands, Fochabers
1901 Butler, Patrick, Hillhead, Forres
1901 Calder, Charles C., Assistant Factor, Earlsmill, Forres
1905 Cameron, Angus, Seafield Estate Office, Elgin
1919 Cant, W. A., Lawrenceton, Forres
1912 Christie, George, Kellas, Elgin
1919 Clark, W. D., Blervie Castle Farm, Forres
1874 CUMMING, Sir William G. Gordon, of Altyre, Bart., Forres
1902 Cunningham, David J., Factor's House, Fochabers

Admitted
1907 Davidson, A. E., Barleymill, Brodie, Forres
1901 Dawson, R. A., Gordon Castle, Fochabers
1899 Dean, James, Crown Inn, Findhorn, Forres
1894 Dean, William, Midtown, Findrassie, by Elgin
1870 Duff, J. W. Wharton, of Orton, Orton House, Fochabers
1904 Edgar, James, jun., *last known address*, Gordon Arms Hotel, Fochabers
1899 Fenwick, William, Darnaway Estates Office, Earlsmill, Forres
1885 Ferguson, George A., Surradale, Elgin
1911 Ferrie, W. B., Home Farm, Kinloss, Forres
1893 Fettes, John, Westertown, Fochabers
1893 Fettes, William, Corskie, Garmouth
1901 Findlay, John F., Trochelhill, Fochabers
1893 Forbes, Robert, Woodhead, Forres
1911 Forsyth, John M., Haughland, Elgin
1895 Fraser, Alexander, Lochyhill, Rafford, Forres—*Free Life Member*
1911 Fraser, Louis Grant, Westerfolds, Duffus, Elgin
1893 Fraser, William, Waterford Mills, Forres
1914 Grant, A. Mackenzie, Seafield Square, Rothes, Elgin
1911 Grant, Allan, Wester Alves, Forres
1893 Grant, Charles, Drumbain, Rothes
1894 Grant, James, of Glen Grant, Rothes
1894 Grant, John, Daleigh, Advie
1899 Grant, J. W. H., of Wester Elchies, Carron House, Carron, Morayshire
1901 Grant-Peterkin, Montagu James, of Grange, Forres
1880 Haddow, P. M., St Mary's, Orton Station
1905 Hastilow, George Reginald, Auchnagonaln, Grantown-on-Spey
1911 James, Robert, jun., Lawrenceton, Forres
1897 Johnston, Colonel C. J., Lesmurdie, Elgin
1893 King, William, Kingsmills, Elgin
1911 Knight, Alexander, Longhill, Lhanbryde
1895 Laing, William, Wallfield, Lochhill, Elgin
1911 Laing, William, Burntack, Dunphail, Forres
1908 Law, Alfred M., Carswell, Alves
1893 Law, Arthur W., Whiterow, Forres
1909 Law, Owen J., Mains of Sanquhar, Forres
1909 Law, William, Solicitor, Elgin
1893 Leitch, Andrew B., Inchstelly, Alves, Forres
1877 Leitch, Simon, Rose Avenue, Elgin
1902 Longmoor, James, Linksfield, Elgin
1902 M'Bain, George, Linkwood Distillery, Elgin
1911 M'Connachie, James, Muirside, Brodie
1893 M'Culloch, Alexander, Ardivot, Lossiemouth
1919 Macdonald, Patrick James, Kirkhill, Elgin
1907 Macdonald, William, Home Farm, Castle Grant, Grantown-on-Spey
1886 M'Gregor, Captain James, Balmenach, Cromdale
1899 M'Intyre, John, West Lund, Hopeman
1870 Mackay, H. M. S., Banker, Elgin
1911 Mackenzie, William, Home Farm, Newton, Elgin
1893 Mackessack, Charles A., c/o Royal Bank, Elgin
1882 Mackessack, George R., of Ardgye and Roseisle, Ardgye, Elgin
1882 Mackessack, R. H., Newton of Struthers, Forres

Admitted
1919 M'Kinlay, David W., Barmuckity, Elgin
1911 M'Lean, Alexander, Corgyle Mains, Aberlour, Morayshire
1893 Maclean, George A., of Westfield, Elgin
1891 MacLeod, Colonel Norman, of Dalvey, Forres
1908 Macpherson-Grant, Sir George, of Ballindalloch, Bart.
1876 M'William, James, Garbity, Orton Station
1909 M'William, John, Shempston, Duffus, Elgin
1911 MacWilliam, Ralph S., Stoneytown, Mulben
1893 Mathieson, Alexander, Doonpark, Forres
1893 Mavor, George, Cluny, Forres
1911 Mavor, John, Earnside, Alves, Forres
1901 Mavor, Richard, Wellhill, Forres
1912 Morrison, Andrew, Brodie Mains, Forres
1872 Muirhead, George, Speybank, Fochabers
1911 Murdoch, John, Burnside, Birnie, Elgin
1911 Mustard, John, Easter Covesea, Duffus, Elgin
1913 Mutch, Alfred, Keam, Duffus
1894 Mutch, James, Deanshaugh, Elgin
1894 Neish, William, Merchant, Mulben, Boharm
1894 Petrie, David, Gilston, Elgin
1919 Petrie, George Grant, Inchbroom, Elgin
1911 Petrie, George, Rosehaugh, New Spynie, Elgin
1919 Petrie, William, Pitairlie, Elgin
1909 Philip, John, Dandaleith, Craigellachie
1918 Prodgers, Major Charles, Knockando, Morayshire
1901 Ramsay, William, of Longmorn, Elgin
1904 Reid, George, Tamdhu Distillery, Knockando, S.O.
1895 Reid, John, Gladhill, Garmouth, Elgin
1899 Rhind, Alexander, Muirton, Kinloss
1911 Robertson, Charles G., Tullochgribban, Grantown-on-Spey
1893 Robertson, Hugh, Balnageith, Forres
1912 Robertson, J., Tullochgribban, Grantown-on-Spey
1896 Robertson, James, Barmuckity, Elgin
1911 Robertson, John, Brodieshill, Alves, Forres
1870 Robertson, William A., Mayfield, Forres
1899 Rose, William M., Toreduff, Alves, Forres
1911 Ross, Simon, Coltfield, Alves, Forres
1906 Russell, James, 21 Reidhaven Street, Elgin
1911 Rutherford, George W., M.R.C.V.S., Forres
1892 Scott, David, Auctioneer, Elgin
1898 Scott, John A., Balnaferry, Forres
1897 Scott, Peter, Mains of Moy, Forres
1911 Sharp, William, Rothes
1913 Shaw, James, Nether Tomdow, Knockando
1911 Shepherd, Alex., Orbliston, Fochabers
1893 Shiach, Gordon Reid, Surgeon Dentist, Elgin
1893 Simpson, William, *last known address*, Burnside, Fochabers
1896 Smith, James M., Salterhill, Elgin
1901 Smith, J. Grant, Strathspey Estate Office, Grantown-on-Spey
1900 Smith, Samuel M'Call, Rose Avenue, Elgin
1897 Souter, George, Greyfriars Iron Works, Elgin
1893 Stephen, Alexander, Coxton, Lhanbryde, Elgin
1894 Stewart, John, Rynaballoch, Cromdale
1911 Strathdee, William, Allarburn, Elgin
1909 Stuart, Lord Colum Crichton, Pluscarden, Elgin

Admitted
1906 Stuart, Robert Dick, Rothes
1911 Thomson, Alexander, of Burgie, Forres
1911 Tulloch, John, New Forres, Forres
1908 Tulloch, William D., Grangegreen, Forres
1899 Turner, James Stuart, Teacher, New Elgin
1882 Urquhart, Robert, jun., Forres
1915 Watson, Harry, Darnaway, Forres—*Free Life Member*
1911 Wattie, William K., Coxton, Elgin
1905 Yool, Thomas, Factor, *last known address*, Ballindalloch

INVERNESS.

1900 Allan, Alexander, Seafield Farm, Inverness
1901 Allan, John M., Easter Duthil, Carr Bridge
1901 Allison, Thomas, Solicitor, Fort-William
1901 Anderson, Alexander, 49 Eastgate, Inverness
1886 Baillie, A. C., Dochgarroch, c/o Baillie & Gifford, W.S., 12 Hill Street, Edinburgh
1883 Baillie, James E. B., of Dochfour, Inverness
1901 Bain, A. T. N., *last known address*, 4 Falcon Square, Inverness
1883 Birnie, Alexander, Wellhouse, Beauly
1892 Birnie, John, Balnafettack, Inverness
1874 Biscoe, T. Ramsay, of Newton, Kingillie, Inverness
1902 Bisset, John A., Borlum, Fort Augustus
1876 Brebner, Robert, 6 Porterfield Road, Inverness
1915 Brebner, R. Wallace, Factor, Isle of Rhum
1897 Bullough, Sir George, of Rum, Bart., Oban
1912 Burr, William, Highland Agricultural Co., Ltd., Inverness
1891 Cameron, Angus, Ben Nevis Auction Mart, Fort-William
1909 Cameron, Donald, Balvonie of Leys, Inverness
1912 Cameron, Donald (D. Petrie, Cameron & Co.), Zetland Villa, Inverness
1909†Cameron, Donald, of Lochiel, Achnacarry, Spean Bridge
1895 Cameron, Francis, Lower Muckovie, Inverness
1890 Cameron, James, Coulnakyle, Nethy Bridge, S.O.
1892 Cameron, James T., Gesto, Isle of Skye
1891 Cameron, John, *last known address*, Culreach Mains, Nethy Bridge
1913 Cameron, John A., National Bank, Portree
1892 Cameron, Robert D., Lochgorm, Inverness
1901 Campbell, Alexander, Viewhill, Fort-George
1901 Cargill, A., Raigmore, Inverness
1891 Cattell, James, Balsparden, Gollanfield
1903 Chisholm, Duncan, Caiplich, Kiltarlity, Beauly
1903 Clark, A. M., Kinreay, 32 Crown Drive, Inverness
1911 Clark, Donald, Woodlands, Gollanfield
1898 Coles, Douglas, Keppoch, Roy Bridge
1900 Cran, William John, Highland Agricultural Co., Ltd., Inverness
1896 Cumming, William A., Allanfearn, Inverness
1902 Davidson, D., Mains of Croy, Gollanfield

Admitted
1893 Davidson, James, Beech Hill, Crown Avenue, Inverness
1893 Davidson, John, Guisachan Home Farm, Inverness
1887 Duncan, James, Fern Villa, Inverness
1912 Ellice, Captain Edward Charles, of Glengarry and Glenquoich, Invergarry House, Invergarry
1902 Elliot, Matthew, Drummond Street, Inverness
1902 Elliot, William Robert, Drummond Street, Inverness
1894 Fraser, Alexander, Balloch, Culloden, Inverness
1911 Fraser, Alexander, Union Street, Inverness
1911 Fraser, Charles, Mains of Gollanfield, Gollanfield, Inverness
1883 Fraser, David, Dalneigh, Inverness
1910 Fraser, George Mackay, Solicitor, Portree
1874 Fraser, James, C.E., 106 Castle Street, Inverness
1901 Fraser, John Huntly, Dalneigh, Inverness
1902 Fraser-Mackenzie, Robert S., Bunchrew, Inverness
1900 Fulton, James, Newton Farm, Lochmaddy
1911 Gair, J. H., Easter Moniack, Kirkhill, Inverness
1892 Garrioch, J. T., Lovat Estates Office, Beauly
1885 Gordon, Jas. G., *last known address*, Elmwood, Inverness
1901 Gordon, Roderick, Wester Inshes, Inverness
1918 Gossip, William M., 54 High Street, Inverness
1901 Graham, Hugh M., Solicitor, Inverness
1907 Grant, Alex., Delrachney House, Carr Bridge
1901 Grant, John C., Garvault, Advie, Strathspey
1894 Grant, John Peter, of Rothiemurchus, Aviemore
1896 Grant, Peter, The Hotel, Carr Bridge
1912 Gray, J. T., Halewood, Crown Drive, Inverness
1911 Grigor, William, The Millburn Distillery, Inverness
1906 Hutchison, Alexander, Balloan, Inverness
1911 Jessiman, Alexander, Craig Cottage, Leachkin Road, Inverness
1905 Johnston, Hugh G., Culduthel Mains, Inverness
1900 Johnston, William, Braeton of Leys, Inverness
1906 Jones, William Everard, Fassfern, Kinlochiel
1901 Junor, Donald, Culduthel Home Farm, Inverness
1909 Keir, James S., Arisaig Estate, Borrodale, Arisaig, Inverness-shire
1889 Kemble, Major, Knock, Skye
1911 Kennedy, James (Macdonald, Fraser, & Co.), Inverness
1915 Kennedy, John M. (North of Scotland College of Agriculture), Lochmaddy, Inverness-shire
1892 Linton, John, 36 Old Edinburgh Road, Inverness
1894 Livingston-Macdonald, Captain R. M., 3rd Seaforth Highlanders, Flodigarry, Isle of Skye
1901 Logan, William, V.S., 3 Victoria Circus, Inverness
1892*†Lovat, Lord, C.B., D.S.O., K.C.V.O., A.D.C., Beaufort Castle, Beauly

Admitted
1892 MacAinsh, John, Congash, Grantown
1905 M'Allister, William, Drakie's House, Inverness
1906 MacArthur, Donald Charles, *last known address*, Etteridge, Newtonmore, Kingussie
1892 M'Bain, William, Pitkerrald, Drumnadrochit
1895 MacBean, Daniel, Cradle Hall, Inverness
1901 M'Coll, A., 22 Eastgate, Inverness
1883 Macdonald, Alexander, Balintore, Kirkhill, Inverness
1899 Macdonald, Archibald Wm., Blarour, Spean Bridge
1918 M'Donald, Donald, Druid Temple, Inverness
1901 Macdonald, Gordon J., South Laggan, Invergarry
1899 Macdonald, James Alex. Ranald, of Balranald, Lochmaddy, North Uist
1891 Macdonald, J. H., of Torbreck, Inverness
1911 Macdonald, James Logie, Morayston, Dalcross Station, Inverness
1901 Macdonald, John, Glenbrittle, Portree, Isle of Skye
1896 Macdonald, John, Distiller, Fort-William
1911 Macdonald, John, Timber Merchant, Union Street, Inverness
1911 Macdonald, John, jun., Mid Dalziel Farm, Dalcross Station, Inverness
1897 M'Donald, Kenneth L., Skirinish, Skeabost Bridge, Isle of Skye
1911 Macdonald, Malcolm, Albert Hotel Bar, Inverness
1883 Macdonald, William, Strowan House, Annfield Road, Inverness
1893 Macdonell, James Sidgreaves, Camusdarroch, Arisaig
1912 MacEwen, Gilbert M., 60 High Street, Inverness
1893 Macfarlane, Andrew, Viewfield, Kingussie
1914 Macgillivray, Finlay, Garboll, Tomatin
1914 M'Gillivray, Kenneth, Clunes Mains, Kirkhill, Inverness
1876 MacGillivray, William, Eoligary, Barra
1877 M'Gregor, Archibald, Gaskbeg, Laggan
1914 MacIntosh, James, Glackton, Gollanfield
1911 Macintosh, John, Dalnavert, Aviemore
1911 Macintosh, Lachlan, Balvonie, Daviot, Inverness
1911 Macintosh, N. D., of Raigmore, Inverness
1914 Macintyre, William, Erchless Estates Office, Strathglass
1898 Mackay, Simon (D. Ross & Co.), Baron Taylor's Lane, Inverness
1901 Mackay, William, Solicitor, Inverness
1893 M'Kenzie, Alexander, C.E., Kingussie
1902 Mackenzie, Alexander J., 62 Academy Street, Inverness
1901 M'Kenzie, David Fraser, Parks of Inshes, Inverness
1912 Mackenzie, Hector Hugh, Balelone, Lochmaddy
1911 Mackenzie, John, Factor, Dunvegan, Isle of Skye
1911 Mackenzie, John, 52 High Street, Inverness
1891 Mackenzie, Dr M. T., Scolpaig, Lochmaddy
1903 Mackenzie, N. B., Estate Office, Fort-William
1874 Mackenzie, N. B., British Linen Bank, Fort-William
1901 Mackenzie, Simon, The Hotel, Lochboisdale

Admitted
1911 Mackenzie, T. C., M.D., F.R.C.P., District Asylum, Inverness
1905 Mackenzie, Thomas, Factor, Invergarry
1886 Mackenzie, William D., of Farr, Daviot (Fawley Court, Henley-on-Thames)
1883† Mackintosh, A. D., of Mackintosh, Moy Hall, Inverness
1905 Mackintosh, Angus (Board of Agriculture for Scotland), Commercial Bank House, Inverness
1914 Mackintosh, Donald A., Balnabual, Croy, Inverness
1903 Mackintosh, Hugh, Galcantray, Gollanfield
1911 Macintosh, Robert L., Hill House, Inverness
1901 Mackintosh, W. W., of Raigmore, Inverness
1910 MacLean, Archibald, Creagorry, Benbecula, South Uist
1911 Maclean, Donald, Teafrish, Beauly
1901 Maclean, Neil, Nunton, Benbecula, Lochboisdale
1911 Maclean, William, Tallisker Farm, Portree
1901 M'Leod, Murdo, Upper Slackbuie, Inverness
1911 M'Naughton, John A., Glen Mamie, Lochailort, Inverness-shire
1908 Macpherson, Albert Cameron, of Cluny, Cluny Castle, Kingussie
1878 Macpherson, C. J. B., of Balavil, Kingussie
1911 Macpherson, James, Corrimony, Glen Urquhart, Inverness
1912 Macpherson, Lachlan Fowke Hussey, of Corrimony (c/o Holt & Co., 3 Whitehall Place, London, S.W.)
1911 Macrae, D., Eastgate, Inverness
1900 MacRae, Duncan, Falls of Truim, Newtonmore
1891 Macrae, Horatio Ross, W.S., of Clunes, Inverness (57 Castle Street, Edinburgh)
1909 Macrae, James W., Lovat Arms Posting Establishment, Beauly
1898 MacRae, U. H. A., *last known address*, Nuide, Inverness
1901 M'Tavish, P. D. (Stewart, Rule, & Co.), Inverness
1900 M'William, W. L., Culmill, Kiltarlity, Beauly
1911 Malcolm, Edward Ellice, W.S., Fort-William
1908 Malcolm, George, jun., Auchendaul, Spean Bridge
1889 Martin, Nicol, of Glendale, Dunvegan
1884 Maxwell, Hon. B. C., Farley House, Beauly
1911 Mearns, Alexander, Platchaig Farm, Beauly
1883 Merry, A. W., of Belladrum, Beauly
1883 Merry, C. J., Belladrum, Beauly
1908 Munro, Alexander, Dell of Inshes, Inverness
1911 Munro, John, Milton, Gollanfield
1898 Murray, Donald, 60 Eastgate, Inverness
1890 Nicholson, Arthur Wm., Arisaig House, Fort-William
1893 Oberbeck, C., *last known address*, Alexandra Hotel, Inverness
1915 Peterkin, George, Viewbank, North Kessock, Inverness
1912 Petrie, David (D. Petrie, Cameron, & Co.), Taybank, Inverness
1911 Punton, James, Tealaggan, Kirkhill, Inverness
1901 Rattray, John C., Kirkton, Bunchrew

Admitted
1911 Reid, Robert G., Castle Stuart, Dalcross, Inverness
1900 Ritchie, William, Teawig, Beauly
1883 Roberts, William, Rockburn, Inverness
1900 Robertson, Alex., jun., *last known address*, Lethendry, Cromdale
1902 Robertson, Donald, Kerrow, Kingussie
1892 Robertson, John, Auctioneer, Inverness
1911 Robertson, William Fraser, Aberchalder Farm, Invergarry
1890 Rose, Hugh Francis, of Holme Rose, Fort-George
1865 Rose, John, Park Gate, Inverness
1911 Rose, John, Hilton, Inverness
1883 Ross, Alexander, Architect, Inverness
1911 Ross, Errington (Macrae & Dick), Postmasters, Inverness
1912 Ross, Robert, Gellions Hotel, Inverness
1883 Ross, William, Seafield of Raigmore, Inverness
1910 Ross, William R., Seafield of Raigmore, Inverness
1884 Rutherford, W. E. Oliver, Netherdale, Beauly
1883 Shaw, Duncan, W.S., Inverness
1901 Shaw, John A., Slackbuie, Inverness
1911 Skinner, A. W., Redhill, Allanfearn, Inverness
1900 Smith, R. A., Wester Lovat, Beauly
1901 Stewart, Charles D., of Brin, Daviot
1887 Stewart, J. C., Glenmoidart, Moidart
1896 Strother, Dr James, Balmachree, Petty, Inverness
1914 Stuart, Francis, Kerrowdown, Drumnadrochit, Inverness
1902 Stuart, Henry, Estate Office, Knoydart, Mallaig
1893 Thom, Allan Gilmour, Canna
1916 Urquhart, William N., 1 Union Street, Inverness
1902 Walker, James, Sawmills, Inverness
1908 Weir, James, Auchnasaul, Spean Bridge
1912 Williams, E. J. N., of S. Electric Works, Waterloo Place, Inverness
1883 Winton, Alexander, *last known address*, Viewhill, Ardersier
1902 Wolfenden, William, Duke of Gordon Hotel, Kingussie

NAIRN.

1902 Adam, Walter, Park, Nairn
1901 Allan, James, Penich, Auldearn, Nairn
1901 Allan, James A., Broomhill, Nairn
1911 Arnott, John M., Wester Clune, Lethen, Nairn
1911 Barron, Colin C., Broombank, Nairn
1878 Cameron, Dr James Angus, of Firhall, Nairn
1911 Campbell, Angus M., Budgate, Cawdor, Nairn
1901 Clark, Alexander, Blackpark, Nairn
1900 Cowan, R., House Hill, Nairn
1883 Donaldson, H. T., Banker, Nairn
1892 Finlay, Lord, K.C., M.P., of Nairn, Nairn
1907 Forbes, Captain the Hon. W. R. D., Lower Cairnglass, Gollanfield, Nairn
1911 Gordon, Thomas, Auchnacloich, Nairn
1911 Johns, W. Wilton, M.D., Ramleh, Nairn
1896 Law, Charles E., The Grange, Brackla, Nairn
1908 Lawson, Alexander, Arniston, Albert Street, Nairn
1896 Macarthur, Alexander, Nairnside, Cawdor, Nairn
1912 M'Intosh, James, Keppernach, Ardclach, Belivat, Nairn

Admitted
1912 Mackintosh, James, Garlic Hill, Auldearn
1901 Mann, John, Cairnglass, Nairn
1885 Mill, George, Piperhill, Nairn
1905 Morrison, John, Whitebridge, Nairn
1914 Munro, Alexander, Rehiran, Cawdor, Nairn
1911 Munro, William, Factor, Glenferness, Nairn
1892 Rand, John P., Geddes Mill, Nairn
1911 Reid, John S., Milton of Kilravock, Cawdor, Nairn
1901 Robertson, Hugh, Newton of Cawdor, Nairn
1873 Robertson, John S., Cawdor Estate Office, Nairn
1901 Rose, Donald, Crook, Nairn
1906 Squair, John, 11 Wellington Street Nairn
1884 Stewart, D. A., Lochdhu, Nairn
1901 Tocher, James, Blairmore, Cawdor Nairn
1908 Tulloch, Charles, Braevail, Lethen, Nairnshire
1911 Tulloch, James, Mains of Moyness, Auldearn, Nairn
1907 Watson, William, Home Farm, Cawdor Castle, Nairn

ORKNEY AND SHETLAND.

Orkney.

1919 Bowie, James Cameron, M.B., C.M., J.P., Park Hall, Bixter, Shetland
1912 Calder, Alex., Sebay, Tankerness, Orkney
1911 Clark, George, Swanbister, Orphir, Orkney
1910 Clouston, John, Graemeshall, Holm, Orkney
1870 Cromarty, William, West End House, St Margaret's Hope, Orkney
1894 Davidson, William Henry Bain, Kirkwall
1896 Heddle, Peter Sinclair, Gaitnip, Kirkwall
1912 Horne, Robert Strong, West Brough, Sanday, Orkney
1901 Ironside, William A., Bankhead, Sandwick, Orkney
1899 Irvine, James, Stove Farm, Sanday, Orkney
1879 Johnstone, James, Orphir House, Orphir
1906 Kennedy, John, Bow, Burray, Orkney
1908 Logie, John, Trumland Lodge, Rousay, Orkney
1892 MacLennan, William, Factor, Zetland Estates Office, Kirkwall
1904 Marwick, William, Estate Office, Walls, Orkney
1887 Maxwell, Henry, How, Sanday
1884 Reid, Alfred, Braebuster, Kirkwall
1905 Robertson, James M. H., Lyking, Sandwick, Stromness
1904 Skea, James G., Ayre, Deerness
1884 Stephen, Donald, Alfred Street, Stromness, Orkney
1912 Walls, Andrew William, Gutterpool, Holm, Orkney
1901 Ward, W. Cowper, Factor, Scar, Sanday

Shetland.

1908 Adie, James A., Voe, Shetland
1884 Anderson, Gilbert, Hillswick, Lerwick
1918 Anderson, Thomas J., Cairnfield, Lerwick

Admitted
1909 Bruce, Mrs Mary D., of Sumburgh, Shetland
1911 Craigie, James J., Ordale, Baltasound, Shetland
1911 M'Dougall, W. Laidlaw, Estate Office, Sumburgh, Shetland
1914 M'Gillivray, J. W., N.D.A., 38 Commercial Street, Lerwick
1907 Mackay, Hugh, Mailland, Baltasound, Shetland
1912 Mackay, William John, Castlepark, Lerwick
1891 Manson, Peter, Lunna, Shetland
1915 Manson, Peter F., Maryfield, Bressay, Lerwick
1892 Pottinger, Sinclair, *last known address*, Gremista, Lerwick
1911 Sandison, J. P., Mandeville, Uyasound, Shetland
1911 Umphray, William Hay, Reawick, Shetland
1901 White, Mountford Adie, Belmont, Uyeasound, Shetland

ROSS AND CROMARTY.

1915 Baird, Hugh, Cadboll Estates Office, Invergordon
1909 Beaton, John A., Bayfield, Kessock
1893 Binning, James, Strathpeffer
1901 Brook, Alexander William, Corn Merchant, Invergordon
1901 Brooke, John A., of Fearn Lodge, Ardgay
1911 Brown, John, F.R.C.V.S., Invergordon
1912 Brown, Neil, Applecross, Kyle of Lochalsh
1911 Brown, William, Muirhead, Cromarty
1914 Budge, R. E. W., Easter Rarichie, Nigg, Ross-shire
1912 Cameron, A., Dounie, Edderton
1911 Cameron, James, Balnakyle, Munlochy
1896 Cameron, Kenneth Murray, Balblair, Edderton
1911 Campbell, Colin, Shiel House, Glenshiel, Ross-shire
1919 Campbell, Don., Balnabeen, Conon Bridge
1901 Carnegie, Andrew, LL.D., Skibo Castle, Ardgay
1905 Cormack, Alex., Shandwick Mains, Nigg Station, Ross-shire
1908 Couper, William H., Wester Balloan, Muir of Ord
1918 Craig, Charles, Killilan, Kintail, Kyle of Lochalsh
1911 Craigen, James M., Kirkton, Balblair
1911 Cran, David R., Ardmore Edderton
1918 Cross, Don. T., Alcaig, Conon Bridge
1911 Cruickshank, T. M., Beaufort Estates Office, Beauly
1909 Cumming, James, Fairfield House, Dingwall
1893 Cuthbert, Major Thomas W., C.M.G., D.S.O., Achindunie, Alness
1899 Davidson, A. B., Lower Kincraig, Invergordon
1907 Davidson, John, Bogbain, Tain
1903 Douglas, George, Nigg, Nigg Station
1911 Duncan, Arthur H., Solicitor, Dingwall
1892 Duncan, William J., Solicitor, Dingwall
1911 Dunnett, Andrew, Newton of Novar, Evanton

Admitted
1914 Firth, Richard Charles Dundas, Dundonnell House, Dundonnell, Rossshire
1884 Fletcher, J. D., of Rosehaugh, Avoch
1898 Forsyth, Ian Asher, Ballintraid, Delny
1904 Fowler, John A., Drumore, Munlochy
1919 Fraser, Alexander, General Merchant, 4 Bank Street, Invergordon
1893 Fraser, Donald, Thistlebrae, Saltburn, Invergordon
1903 Fraser, Major J. W., Rarnachroisg, Garve
1893 Fraser, Malcolm F., Balaldie, Fearn
1909 Gair, George, M.R.C.V.S., Conon Bridge
1912 Gill, A. T., Rosskeen, Invergordon
1896 Gill, William Hope, Tomich, Invergordon
1911 Gilroy, George, jun., Easter Moy, Urray, Muir of Ord
1896 Glendinning, G. E., Glastullich, Nigg
1914 Gordon, Alex. P., Arabella, Nigg, Rossshire
1911 Grant, Walter S., Flowerburn Mains, Fortrose
1884 Henderson, John, Town Clerk, Fortrose
1889 Henderson, Thomas, Fortrose
1908 Henderson, William Paterson, Ankerville, Nigg Station
1911 Hill, A. W., of Lemlair, Dingwall
1903 Hope, Stephen J., Kinnahaird, Strathpeffer
1905 Hosack, J. A. Campbell, c/o Hosack & Sutherland, Royal Bank of Scotland, Oban
1911 Jack, Alexander, Easter Kinkell, Conon Bridge
1911 Kemp, Charles, Gateside, Munlochy
1901 Laing, Robert P. S., Struan House, Dingwall
1883 Littlejohn, Alexander, of Invercharron, Ardgay
1893 Logan, David, of Auchtertyre, Strome Ferry
1902 MacBean, W. Ratagan, Glenshiel, Kyle
1901 M'Corquodale, A., Meddat, Parkhill, Ross-shire
1902 M'Donald, Andrew Hall, of Calrossie, Nigg, Ross-shire
1893 Macdonald, Donald, Wilkhaven, Portmahomack
1909 Macdonald, T., Croftcrunie, Tore
1911 MacFarquhar, John, Cullicudden, Conon Bridge
1906 M'Gillivray, John, Aldie, Tain
1874 MacGregor, James G., Tain
1911 M'Hardy, Alaster, Braemore, Garve, Ross-shire
1911 M'Intosh, William, Tarradale Hotel, Muir of Ord
1897 MacIntyre, Alex. Mackay, Brae, Dingwall
1875 M'Intyre, P. B., Mains of Findon, Conon Bridge
1875 MacIntyre, Robert, of St Martin's, Conon Bridge
1907 Mackay, David J., of Heathmount, Tain
1901 Mackenzie, Colonel A. F., of Ord, Ord House, Muir of Ord
1901 Mackenzie, Colonel A. F. H. Stewart, of Seaforth, Brahan Castle, Conon Bridge
1892 Mackenzie, Sir A. G. Ramsay, of Coul, Bart., Strathpeffer
1872 Mackenzie, Andrew, of Dalmore, Alness
1903 Mackenzie, Charles, British Linen Bank, Tain

Admitted
1901 M'Kenzie, Donald, Meikle Ussie, Conon Bridge
1900 Mackenzie, Edward J., Hilton Farm, Tain—*Free Life Member*
1907 Mackenzie, E. N. Burton, Kilcoy Castle, Killearnan, R.S.O.
1900 M'Kenzie, Eric G., Ardross Mains, Alness
1911 Mackenzie, John, Balnain, Conon Bridge
1895 Mackenzie, Sir Kenneth J., of Gairloch, Bart., Conan House, Conon Bridge
1883 Mackenzie, William, Procurator-Fiscal, County Buildings, Dingwall
1899 Mackenzie, William Farquharson, yr. of Dalmore, Alness
1911 Mackintosh, A. A., Quarryfield, Munlochy, Ross-shire
1901 Maclean, R., of Drynie, Kessock, Inverness
1913 MacLennan, John, Estate Office, Strathconan, Muir of Ord
1901 MacLeod, Captain R., of Cadboll, Invergordon Castle, Invergordon
1878 M'Raw, Donald, Strathgarve Estates Office, Garve, R.S.O.
1912 Maitland, Andrew Gordon, Architect, Tain
1911 Mann, John, Bog Farm, Munlochy
1887 Matheson, Sir Kenneth J., of Lochalsh, Bart., Gledfield, Bonar
1911 Middleton, Frank A., Rosefarm, Cromarty
1881 Middleton, Lord, Applecross, Lochcarron
1903 Middleton, Thomas, Corntown, Conon Bridge
1893 Middleton, Walter Ross Taylor, Solicitor, Dingwall
1911 Monro, Major C. L. D., of Allan, Fearn, Ross-shire
1905 Moore, D. H., Drummond, Evanton
1911 Morrison, William, Gledfield Home Farm, Ardgay, Ross-shire
1911 Munro, Alexander, Arkendeith, Avoch
1913 Munro, Finlay, Rockfield, Fearn
1883† Munro, Sir Hector, of Foulis, Bart., Dingwall
1893 Munro, Hector, V.S., Fearn
1901 Munro, Kenneth, Tullich, Munlochy
1891 Murdoch, Alexander, Dalnavie, Alness
1884 Murray, Charles J., of Lochcarron, Dingwall
1883 Murray, William, Kilcoy, Killearnan, R.S.O.
1892 Ness, Charles, Calrossie Mains, Nigg Station
1908 Paterson, William, Ironmonger, Invergordon
1874 Paterson, William G., Ord, Invergordon
1913 Pearson, James, Altyre, Forres
1898 Perrins, C. W. Dyson, Ardross Castle, Alness
1900 Peterkin, John W., Dunglass, Conon Bridge
1901 Peterkin, William, Dunglass, Conon Bridge
1906 Rattray, Charles Gordon, Pitglassie, Dingwall
1884 Reid, N., New Kelso, Strathcarron, Rossshire
1895 Robertson, John Cameron, Fodderty, Dingwall
1904 Robertson, Peter D., Castlecraig, Nigg Station
1893 Ross, A. M., Hilton, Fearn, Rossshire

Admitted
1902 Ross, Andrew George, Millcraig, Alness
1908 Ross, Donald (Wallace, Fraser, & Co.), Tain
1893 Ross, George, Old Shandwick, Nigg
1893 Ross, George A., Rhynie, Fearn
1876 Ross, James, 29 Shore Road, Invergordon
1892 Ross, John F., Pitcalnie, Nigg
1908 Ross, Sutherland M. (Wallace, Fraser, & Co), Tain
1887 Ross, General W. C., C.B., of Cromarty, Cromarty
1901 Ross, William, Bridgend, Dingwall
1892 Scott, James, Fearn
1893 Simpson, David William, Arcan Mains, Muir of Ord
1911 Sinclair, A., Balnaguie, Munlochy
1897 Spence, Alexander O. Stewart, of Gargunston, Muir of Ord
1911 Stirling, Captain A., Garve
1896 Taylor, Alexander, Cromartie Estates Office, Kildary
1900 Thompson, Alexander M., Conon Brae, Conon Bridge
1911 Urquhart, John, Ironmonger, Dingwall
1911 Walker, Robert, Contullich, Alness, Ross-shire
1911 Wight, Evan, Mackay's Hotel, Tain
1901 Wood, James, Lochslin, Fearn, Rossshire
1912 Wooley, Thomas, Royal Hotel, Tain
1899 Wotherspoon, George, Castlecraig, Nigg
1901 Young, George, Tarrel, Fearn, Ross-shire
1901 Young, James G., Cadboll, Fearn, Rossshire

SUTHERLAND.

1911 Anderson, Andrew, General Merchant, Bonar Bridge
1906 Cameron, James D., Kirkton, Golspie
1891 Campbell, G. J., Sheriff-Substitute, The Court House, Dornoch
1913 Campbell, Ian Macgregor, Shinness, Lairg
1893 Campbell, J. R., Glencassley, Invershin
1901 Dudgeon, William John, Crakaig, Loth
1906 Elliot, Thomas, Scriberscross, Rogart
1911 Grant, Alick, Evelix, Dornoch
1908 Haldane, H. P., Skelbo, Sutherland
1900 Hardie, James F., Factor, Skibo, Dornoch
1899 Hill, Edward R., Naviedale, Helmsdale
1874 Hill, Robert Robertson, Naviedale House, Helmsdale
1899 Macaulay, A. N., Banker and Factor, Golspie
1890 Mackintosh, John, *last known address*, Proncy, Dornoch
1911 Menzies, James, Blairich, Rogart
1911 Mitchell, James, Ribigill, Tongue
1919 Morrison, Alexander, of Kinloch (and Rio Penitent, Punta Arenas, Chile), Kyle of Tongue, Sutherland
1901 Mundell, C., Delny Farm, Delny
1901 Mundell, Walter, Dalchork, Lairg
1915 Rose, Angus, Coul Farm, Skelbo
1911 Rose, John C., Coul, Skelbo, Sutherland
1911 Stuart, Peter, Clynelish, Brora
1911 Sutherland, The Duke of, Dunrobin Castle, Golspie

Number of Members, 617.

8.—BORDER DIVISION.

EMBRACING THE

COUNTIES OF BERWICK, PEEBLES, ROXBURGH, AND SELKIRK.

BERWICK.

Admitted
1900 Aitchison, John, Lochton, Coldstream
1915 Aitchison, Robert, Hardiesmill Place, Gordon
1914 Aitchison, William, Hyndside Hill, Gordon, Berwickshire
1892 Aitchison, William, West Printonan, Greenlaw
1901 Aitken, Captain John Christie, Nisbet, Duns
1897 Balfour, C. B., of Newton Don, Kelso
1914 Bathgate, James, Renton Barns, Grantshouse
1907 Bell, Robert B., Northfield, St Abbs
1893 Bertram, George William, Birkenside, Earlston
1898 Black, James, Norham West Mains, Norham-on-Tweed
1904 Blackadder, John W., Ninewell Mains, Chirnside
1891 Broomfield, George L., Solicitor, Lauder
1888 Brown, Colonel, of Longformacus, Duns
1893 Brown, Robert, Cammo Foundry, Duns
1914 Bruce, Robert, Thirlestane, Lauder
1914 Bryson, George, Corsbie, Earlston
1918 Butter, Archibald E., Temple Hall, Coldingham
1915 Calder, Alexander M., Lintlaw, Chirnside
1884 Calder, T. A., Billie Mains, Chirnside
1907 Carr, J. Evelyn, Heathery Tops, Scremerston, Berwick-on-Tweed
1878 Carr, Robert, The Elms, Berwick-on-Tweed—*Free Life Member*
1914 Clyde, Hugh, Bluecairn, Lauder
1896 Cockburn, David, *last known address*, Foulden Hill, Berwick-on-Tweed
1902 Cockburn, James, Knock, Duns
1889 Cookson, C. L. Stirling, of Renton, Grant's House
1872 Cowe, Peter, Old Castles, Chirnside
1901 Craw, James Hewat, West Foulden, Berwick-on-Tweed
1899 Darling, Alexander, Governor's House, Berwick-on-Tweed
1880 Darling, Thomas, 1 Palace Street East, Berwick-on-Tweed
1882 Dickinson, Robert, Longcroft, Oxton
1899 Dickinson, William Bell, Longcroft, Oxton
1891 Dodds, Robt., Blackadder Bank, Chirnside
1898 Doughty, James T. S., Ayton
1914 Durie, Norman Percival, Ramrig, Duns
1887 Dykes, Thomas, Press Mains, Reston
1912 Elder, John, Tweedside Implement Works, Berwick-on-Tweed
1900 Elliot, David P., Nesbit Hill, Duns
1893 Elliot, Frank, Middlestots, Duns
1910 Elliot, William W., Harehead, Duns
Admitted
1882 Ferguson, J., Duns Castle Estate Office, Duns
1898 Fleming, John, Bowerhouse, Oxton, Lauder
1897 Forrest, Robert Jack, Stewartslaw, Edrom
1884 Fulton, John, Hatchednize, Coldstream
1909 Gibb, Allan Gordon Shirra, Boon, Lauder
1914 Gibb, George G. Shirra, Old Boon, Lauder
1878†Gibb, Robert Shirra, Boon, Lauder—*Free Life Member*, 1885
1894 Grieve, Andrew, Flass, Gordon
1885 Grieve, James, Rumbletonlaw, Greenlaw
1914 Grieve, William, Rawburn, Duns
1892 Haldane, Fred., Westwood, Reston
1898 Hardy, George, Redheugh, Cockburnspath
1898 Hardy, William, jun., Whitelaw, Edrom
1903 Henderson, George, East Morriston, Earlston
1914 Herbertson, James M., Fans, Earlston
1881 Herbertson, Robert H., Fans, Earlston
1914 Hogg, Alexander, Chapel Mains, Earlston
1893 Hogg, George, Horsely, Reston
1907 Hogg, George, jun., Penmanshiel, Grant's House
1893 Hogg, William, Clackmae, Earlston
1900 Holme, Charles H., of Rathburne, Duns
1898†Home, The Earl of, The Hirsel, Coldstream
1880 Hood, James, Linhead, Cockburnspath
1900 Hood, John, Mid-Edrom, Edrom
1879 Hope, A. Peterkin, of Sunwick, Berwick
1886 Hope, Colonel Charles, of Cowdenknowes, Earlston
1876 Hunter, James, of Antonshill, Coldstream
1910 Huntly, James, Hirsel Poultry Farm, Coldstream
1898 Inch, John, Quixwood, Grant's House
1893 Johnstone, Robert Fender, Law House, Coldingham
1886 Laurie, John H., Gavinton, Duns
1907 Leggat, J. Morison, Legerwood, Earlston
1907 Little, Jack, of Hawkslaw, Coldstream
1859 Lockie, William, Choicelee, Duns
1893 Lyal, Alexander, Greenknowe, Gordon
1905 Lyal, Robert, Cammerlaws, Westruther, Gordon
1914 Lyal, Thomas Brown, Greenknowe, Gordon
1884 Lyal, William, Edington Mains, Chirnside
1914 M'Creath, W. R., Berwick-on-Tweed
1901 M'Dougal, Arthur Robert, Blythe, Lauder
1893 M'Dougal, James, Bassendean, Gordon

Admitted
1893 M'Dougal, John, Lylestone, Lauder
1893 Mackay, John, Haughhead, Earlston
1914 M'Kerrow, George E., Addinston, Oxton
1881 Mack, Joseph, of Berrybank, Reston
1906 Mather, Matthew, Printonan, Duns
1906 Mather, William, West Mains, Milne Graden, Coldstream
1898 Milne, Robert P., Spital Mains, Berwick-on-Tweed
1919 Mitchell, Captain A. J., of Stow, Carolside, Earlston
1903 Mitchell-Innes, A. Harold, of Whitehall, Chirnside
1914 Moir, Charles John, Manderston, Duns
1893 Murray, James, Springbank, Reston
1893 Murray, Thomas, Brockholes, Grant's House
1901 Paterson, D. T., Sinclair's Hill, Duns
1906 Porteous, Andrew M., Solicitor, Coldstream
1908 Prentice, John, Grain Merchant, Berwick-on-Tweed
1898 Purdie, Adam, Cranshaws, Duns
1898 Ritchie, C., Kimmerghame Mains, Duns
1892 Robertson, William, Blinkbonny, Earlston—*Free Life Member*
1874 Robson, John, Millknowe Cranshaws, Duns (Newton, Bellingham)
1914 Runciman, George W., Wantonwall, Lauder
1915 Rutherford, James, Kirkhill, Earlston
1915 Scott, Colonel Lord H. T., Gladswood, Melrose
1910 Sharpe, Robert W., The Park, Earlston
1906 Sommerville, William, Eccles Tofts, Greenlaw
1915 Souttar, W. G. W., Swinton Hill, Duns
1898 Stephenson, Thomas, Chapel, Duns
1914 Stewart, Kenneth Lindsay, Boon, Lauder
1908 Stirling, Hugh B., Darlingfield, Gordon
1898 Stokoe, Thomas, Tweed Iron Works, Berwick-on-Tweed
1880 Swinton, J. L. Campbell, of Kimmerghame, Duns
1899 Taylor, J. P. Ross, Mungo's Walls, Duns
1915 Taylor, Lieut-Colonel St J. Du Plat, D.S.O., Purves, Greenlaw
1885 Thomson, Samuel, Buxley, Duns
1898 Torrance, Thomas, Hutton Hall, Barns, Hutton, Berwick
1894 Turnbull, George Gillon, of Abbey St Bathans, Grant's House
1884 Tweedie, David, Nether Howden, Oxton
1900 Veitch, Archibald, of Hume Hall, Greenlaw
1888 Vincent, E. H., *last known address*, Lauder Barns, Lauder
1914 Waring, Major Walter, M.P., of Lennel, Coldstream
1903 Watson, G. Scott, Eccles Newton, Coldstream
1884 Watson, W. H., *last known address*, Ruthven, Coldstream
1898 Webster, John, Edrom-Newton, Edrom
1885 Welsh, Alexander, Seedsman, Coldstream
1912 Westgarth, George, Restonhill, Reston
1900 Wight, James G., Greenwood, Grants House
1898 Wilson, James H., Crumstane, Edrom
1900 Wilson, Philip, Corn Factor, Duns
1906 Wright, A. T., East Reston, Reston
1905 Wyllie, Alexander, Pathhead, Cockburnspath
1915 Younger, John Henderson, Milne Graden, Coldstream

PEEBLES.

Admitted
1902 Ainslie, John, Estate Office, Stobo
1912 Ballantyne, Francis L., Stoneyhill, Walkerburn
1905 Ballantyne, Sir Henry, jun., Provost of Peebles
1905 Ballantyne, Henry Norman, Caerlee, Innerleithen
1906 Ballantyne, James, Blythbank, Dolphinton, Peeblesshire
1912 Ballantyne, John K., Walkerburn
1884 Ballantyne, William, Wormiston, Eddleston
1915 Blackwood, William T., W.S., Peebles
1905 Cairns, Andrew, Live Stock Salesman, Peebles
1881 Carmichael, Lord, of Skirling, Murrayfield, Biggar
1902 Clark, R., Gosland, Biggar
1898 Clarkson, Alexander, Skirling Mill, Biggar
1892 Constable, George W., Traquair Estate Office, Innerleithen
1911 Constable, N. H., Traquair, Innerleithen
1893 Cree, William, Kailzie, Peebles
1899 Cunningham, Captain John, of Leithenhopes, Innerleithen
1919 Dickson, John Livingstone, Corstane, Broughton
1912 Dickson, John Stodart, Flemington, Dolphinton
1874 Dickson, W. L., Drummelzier Haugh, Biggar
1905 Douglas, George, Earlypier, Eddleston
1915 Douglas, Robert L., Felton, West Linton
1884 Dyson, F. W., Standalane, Peebles
1898 Elliot, William, Cardrona, Peebles
1884 Ellis, John, Laverlaw, Peebles
1882 Fergusson, Sir James R., of Spitalhaugh, Bart., West Linton
1906 Forrest, Allan, Whitfield, West Linton
1906 Gairns, Alex. C., Cloverhill, Broughton
1890 Glenconner, Lord, The Glen, Innerleithen
1884 Gracie, Charles A., Easter Happrew, Stobo
1915 Gray, Robert, Medwyn Mains, West Linton
1905† Hay, Sir Duncan E., of Haystoun, Bart., Kingsmeadows, Peebles
1894 Jack, George, Netherurd, Dolphinton
1905 Johnston, John C., M.R.C.V.S., Peebles
1905 Laidlaw, David, Hallsmyre, West Linton
1912 Laidlaw, William, Kingsmeadows, Peebles
1884 Lindsay, James, *last known address*, Wester Happrew, Stobo
1905 Linton, Simon, jun., Posso, Peebles
1912 Lorimer, H. D., Callands, West Linton
1906 Macdonald, D., Kilbucho House, Biggar, Peeblesshire
1919 Mackintosh, A. Blake, Traquair Estate Office, Innerleithen
1898 Marshall, H. B., of Rachan, Broughton
1907 Martin, William, Caberston, Walkerburn
1905 Masterton, Ebenezer B., Burnetland, Broughton
1885 Maxwell, James, Eddleston Bank, Eddleston
1905 Mitchell, Andrew D., West Loch, Eddleston
1906 Montgomery, Richard, Home Farm, Lamancha
1905 Murray, Lord, of Elibank, Juniper Bank, Walkerburn

Admitted
1906 Paterson, Tom, Crookstone, Peebles
1906 Paterson, William, Crookstone, Peebles
1898 Patrick, James, Mailingsland, Peebles
1907 Philipson, Hylton, of Stobo, Peeblesshire
1898 Purdie, James G., Hamildean, Stobo
1881 Ritchie, G. D., Chapelgill, Broughton
1906 Robertson, James Morton, Portmore, Eddleston
1906 Russell, John, South Mains, Skirling, Peeblesshire
1898 Russell, William, Bonnington, Peebles
1919 Sanderson, David, Netherurd Mains, Dolphinton, Peebles
1915 Simpson, Henry D., Peebles
1867 Smith, J. Turnbull, LL.D., Kingswood, Peebles
1919 Stewart, Hugh, West Bold, Walkerburn, Peebles
1900 Stewart, Thomas, Glenrath, Manor
1919 Stuart, Ben. C., Darnhall Mains, Eddleston, Peebles
1886 Thorburn, M. G., of Glenormiston, Innerleithen
1889 Thorburn, William, Craigerne, Peebles
1905 Thorburn, William, Hearthstanes, Tweedsmuir
1906 Tudhope, James, Nether Falla, Eddleston
1898 Tudhope, J., Broughton Place, Broughton
1906 Watson, Robert, Edderston, Peebles
1907 Weir, Thomas, Robinsland, West Linton
1878 Williamson, Miss Katharine Isabella, of Cardrona, Peebles

ROXBURGH.

1914 Allan, R. H., Smailholm Mains, Kelso
1898 Anderson, Robert B., of Glenburn Hall, Jedburgh
1915 Arnott, John, Haymount, Kelso
1884 Ballantyne, David, Shaws, Newcastleton
1908 Barr, Samuel, jun., Nottylees, Kelso
1898 Bell, John A., Ploughlands, St Boswells
1914 Bell, Robert, Kirkton, Hawick
1885 Bell, William Scott, yr. of Woll, Hawick
1889 Boyd, Andrew, F.R.C.V.S., Melrose
1914 Brown, John C., Hundalee, Jedburgh
1906 Brownlee, Robert C., Linton, Kelso
1919 Brownlie, John R., Ferneyhill Farm, Kelso
1914 Bruce, James Alexander, Easter Langlee, Galashiels
1889 Bruce, John, Easter Langlee, Galashiels
1906 Bruce, Robert, of Wauchope, Sunnyside, Jedburgh
1915 Bulmer, J. M., Waverley Lodge, Melrose
1914 Burns, James K., 35 High Street, Hawick
1908 Burns, William, Sunnyside, Hawick
1871 Caverhill, John, Jedneuk, Jedburgh
1893 Clark, John G., *last known address*, Mossburnford, Jedburgh
1897 Cochrane, William E. A., Roansgreen, Newcastleton
1909 Connochie, Robert, V.S., St Boswells
1911 Cox, Thomas H. C., of Wooden, Kelso
1884 Cunningham, Robert, Branxholme House, Hawick
1918 Curle, James, of Priorwood, Melrose

Admitted
1906 Curle, Robert Andrew, of Overwells, Jedburgh
1915 Dalgleish, William, Oakbank, Hawick
1912 Dalrymple, Miss Mary Adelaide, Elliston, St Boswells
1906 Davidson, Alexander, Whitton, Kelso
1898 Davidson, Andrew, Auctioneer, Melrose
1899 Davidson, Gilbert, Burnhead, Hawick
1914 Davidson, John, Adderston Shiels, Hawick
1907 Davidson, Jonah, Forest Field, Kelso
1898 Davidson, Mark Turnbull, Melrose
1898 Davidson, Richard, Swinnie, Jedburgh
1895 Davidson, W., Edgerston, Jedburgh—*Free Life Member*
1914 Deuchar, B., Bailieknowe, Stitchel
1919 Dodds, Thomas, Hardenpeel, Jedburgh
1908 Dodds, William, Hiltonshill, St Boswells
1914 Donald, James, Palace Farm, Jedburgh
1904 Douglas, Allan M., Butchercote, St Boswells
1898 Douglas, Andrew, Saughtree, Newcastleton
1893 Douglas, Captain Edward Palmer, of Cavers, Midgard, Hawick
1889 Douglas, Francis, Caverton, Roxburgh
1906 Douglas, John, Swinside, Townfoot, Jedburgh
1906 Douglas, Thomas, Gatehousecote, Hawick
1906 Douglas, Walter S., Hindhope, Jedburgh
1909 Douglas, William, Springwood Park, Kelso
1908 Dow, John, Lempitlaw, Kelso
1914 Dunlop, Colonel J., C.B., Struan, St Boswells
1898 Dunn, David, *last known address*, Roxburgh Mains, Roxburgh
1915 Elder, William Henry, Bellevue, Jedburgh
1914 Elliot, Arthur S., Balmer, Ancrum, Roxburgh (10 Dale Street, Liverpool)
1880 Elliot, James, of Flex, Hawick
1914 Elliot, James, Newhouse, Lilliesleaf, Roxburghshire
1884 Elliot, Robert, Hermitage, Newcastleton
1906 Elliot, Robert T., Chatto, Kelso
1905 Elliot, Thomas, Kirndean, Newcastleton
1915 Elliot, Thomas R., Attonburn, Kelso
1893 Elliot, Thomas Robert Barnewall, of Clifton Park, Kelso
1907 Elliot, Walter, Kirndean, Newcastleton
1906 Ewing, Ian Alastair, West Nisbet, Ancrum
1884 Fairbairn, J. J., of Fens, St Boswells
1913 Fenwick, Frank, North House, Hawick
1919 Fergusson, Thomas, Millheugh, Jedburgh
1895 Fleming, William, Hallrule, Bonchester, Hawick
1906 Fraser, Charles, St Helens, Melrose
1891 Fraser, M. P., Linton, Burnfoot, Kelso
1914 Gladstone, James, Wester Langlee, Galashiels
1894 Goodfellow, A., High School, Kelso—*Free Life Member*
1915 Graham, James, Crosshall, Eccles
1907 Graham, Robert, Kaimflat, Kelso
1906 Greig, Major J. L., of Eccles, Kelso
1884 Grierson, Robert, Whitechesters, Hawick
1907 Grieve, Charles Walter, Dunira, Hawick
1907 Grieve, Robert, Branxholme Braes, Hawick
1914 Grieve, Walter J., Southfield, Hawick
1890 Griffith, Sir Richard Waldie, of Hendersyde Park, Bart., Kelso
1895 Haddon, Andrew, Honeyburn, Hawick

Admitted
1914 Haddon, A. Douglas, Royal Bank Buildings, Hawick
1914 Hamilton, James, Highridgehall, Kelso
1914 Hamilton, William, Earlside, Hawick
1897 Hart, Andrew D., The Flatt, Newcastleton
1892 Hay, Athole S., of Marlefield, Roxburgh
1911 Hay, Robert Athole, Marlefield, Roxburgh
1914 Hedley, George, Howpasley, Hawick
1914 Henderson, James, Wiltonburn, Hawick
1880 Henderson, Robert, Mounthooly, Jedburgh
1901 Hogarth, James, Prior Bank, Kelso
1895 Hogarth, William Gray, Linton, Bankhead, Kelso
1909 Hutcheson, David Soot, Broomhill, Melrose
1895 Hutcheson, William, Courthill, Kelso
1914 Inglis, Andrew, Nether Tofts, Hawick
1914 Inglis, Walter, Clerklands, Lilliesleaf, Roxburghshire
1895 Jackson, James W., Hassendean, Hawick
1906 Johnston, James S., Kersknowe, Kelso
1887 Johnston, John S., Crailinghall, Jedburgh
1889 Johnston, William Lee, Oxnam Neuk, Jedburgh
1909 Kerr, H. F., Rawflat, Ancrum
1890 Kidd, Henry, *last known address*, Lowood, Melrose
1914 Knox, Thomas, Martinshouse, Hawick
1889 Laidlaw, Thomas R., Normanie, Jedburgh
1914 Laing, Norman, Cleughead, Bonchester Bridge, Hawick
1884 Leadbetter, Hugh M., Knowesouth, Jedburgh
1904 Leadbetter, Thomas Greenshields, of Spital Tower, Denholm, Roxburghshire
1914 Lunn, Robert G., Denholm Hill, Hawick
1872 Lyal, William, St Johns, Gattonside, Melrose
1914 M'Connel, Andrew W., Scraesburgh, Jedburgh
1887 M'Laren, D., Fairnington, Roxburgh
1914 MacTaggart, Robert, Ingleside, Hawick
1906 M'Tier, J. Cameron, of Menslaws, Jedburgh
1904 Mather, James B., Mellendean, Kelso
1893 Mather, R. V. (Laing & Mather), Kelso
1894 Michael, Reginald W., Kerchesters, Kelso
1914 Minto, The Earl of, Minto House, Hawick
1886 Moffat, James, Craick, Hawick
1898 Murray, William R., Charterhouse, Kelso
1914 Ogilvie, Allister, Holme Lea, Kelso
1906 Oliver, Douglas, Hassendean Bank, Hawick
1880 Oliver, John, Borthaugh, Hawick
1893 Oliver, Lieut.-Colonel William James, of Lochside, Kelso
1893 Paton, E. Douglas, Braehead, St Boswells
1889 Paton, Major James, of Crailing, Jedburgh
1899 Pearson, Thomas Smith, of Otterburn, Roxburgh
1914 Plenderleith, William, Middle Softlaw, Kelso
1863*† Polwarth, Lord, Harden House, Hawick
1914 Porteous, J. A., British Linen Bank House, Newtown St Boswells
1909 Potter, W. B., Ashyburn, Ancrum

Admitted
1895 Price, W. M., Minto Estates Office, Hawick
1906 Purves, William, Kersquarter, Kelso
1898 Rae, James William, Colmsliehill, Galashiels
1872 Renwick, John, Nurseryman, Melrose
1908 Rintoul, Captain A. Jeffrey, Allerton House, Jedburgh
1894 Ritchie, D. N., of The Holmes, St Boswells
1893 Roberton, James, Morebattle Tofts, Kelso
1898 Roberton, John, Ladyrig, Roxburgh
1898 Roberton, R. A., Yetholm Mains, Kelso
1904 Roberts, T. J. S., of Drygrange, Melrose
1904 Roxburghe, The Duke of, Floors Castle, Kelso
1905 Runciman, A., St Aidan's Manse, Melrose
1901 Russell, George Alexander, Glen Douglas, Jedburgh
1913 Rutherford, Andrew, of Pinnacle, Ancrum
1906 Rutherford, Henry, of Fairnington, Roxburgh
1910 Rutherford, Peter, Hilton, St Boswells
1898 Scott, Arthur Francis, of Howcleuch, Langlee, Jedburgh
1884 Scott, Charles, Milsington, Hawick
1889 Scott, Hon. Henry J., Harden, Hawick
1883 Scott, Hon. J. C. Maxwell, of Abbotsford, Melrose
1906 Scott, James, Troneyhill, Ancrum
1914 Scott, James C., Broomlands, Kelso
1894 Scott, John, Borthaugh, Hawick
1898 Scott, John, Ploughlands, Ancrum
1906 Scott, John, Frogden, Kelso
1901 Scott, John Alex., of Falla, Mossburnford, Jedburgh
1906 Scott, John M., Cessford, Kelso
1889 Scott, John Robson, of Newton, Jedburgh
1882 Scott-Makdougal, H. J. E., of Makerston, Kelso
1898 Scott, Robert C., Graden, Kelso
1899 Scott, T. W. Robson, of Lanton Tower, Jedburgh
1906 Scott, William F., Splaw, Kelso
1883 Sinclair, C. G., Grahamslaw, Roxburgh
1914 Smith, George S., Whitehouse, St Boswells
1888 Smith, J. R. C., Mowhaugh, Kelso—*Free Life Member*
1881 Smith, R. C., Ormiston, Roxburgh
1906 Smith, T. D. Crichton, Newlands, Kelso
1887 Smith, Thomas A., Bedrule, Jedburgh
1914 Smith, William, Rutherford, Kelso
1880 Somervail, J. A., of Hoselaw, Kelso
1907 Sprot, Captain Mark, Riddell, Lilliesleaf
1895 Stedman, James, Tempendean, Jedburgh
1909 Stewart, James B., Faughill, St Boswells
1908 Stirling, John W., Kersmains, Roxburgh
1919 Storie, William R., Agricultural Implement Merchant, Kelso
1906 Tait, David W. B., W.S., Edenside, Kelso
1894 Tait, R. M., Copland, Ancrum
1897 Teacher, Donald M., Spittal-on-Rule, Jedburgh
1913 Templeton, Thomas, Sandyknowe, Kelso
1909 Thomson, Major A. D., of Nenthorn, Kelso
1904 Thomson, Andrew F., of Cowbog, Morebattle, Kelso

Admitted
1914 Thomson, Moffat S., of Lambden, Spotsmains, Kelso
1899 Thomson, Thomas, Hobton, Ancrum
1897 Thomson, W. H., Over Roxburgh, Roxburgh
1889 Tress, George Russell, *last known address*, Whitelee, St Boswells
1894 Tress, William Maxwell, *last known address*, Faughill, St Boswells
1899 Tully, Alex. B., V.S., Kelso
1899 Turnbull, James, 3 Bridge Street, Kelso
1889 Turnbull, Mark, Melrose
1906 Turnbull, Walter, Hawickmill, Hawick
1914 Usher, Harry, Courthill, Hawick
1872 Usher, Thomas, Courthill, Hawick
1900 Usher, Sir Robert, of Norton, Bart., Wells, Hawick (37 Drumsheugh Gardens, Edinburgh)
1880 Waddell, Alex., of Palace, Jedburgh
1898 Walker, Alexander, Chemist, Jedburgh
1900 Warden, John S., 35 Bowmont Street, Kelso
1914 Watson, John S., Easter Softlaw, Kelso
1898 Watson, John, Greatridge Hall, Kelso
1894 Watson, J. M., Melrose
1889 Watson, T. Lindsay, Briery Yards, Hawick
1898 Wilson, Charles John, Deanfield, Hawick
1884 Wyllie, Alexander, Whitelee, Galashiels
1914 Young, John, Kippilaw Mains, St Boswells
1894 Younger, Wm., of Ravenswood, Melrose

SELKIRK.

1889 Anderson, T. Scott, of Ettrick Shaws, Selkirk
1906 Barrie, Walter, Sundhope, Yarrow, Selkirk
1915 Brown, John, Philiphaugh Farm, Selkirk
1862 Brydon, Adam, Netherbarns, Galashiels
1899 Burns, James (George Burns & Sons, Engineers), Galashiels
1889 Connochie, Thomas D., V.S., Selkirk
1914 Dun, George, Island House, Galashiels
1915 Dun, John (of John Dun & Co., Merchants), Galashiels
1914 Dunlop, Charles W., of Whitmuir Hall, Selkirk
1869 Elliot, A. T., Newhall, Galashiels
1912 Elliot, John, Blackhaugh, Clovenfords

Admitted
1889 Elliot, John, Meigle, Clovenfords
1906 Elliot, Walter, Newhall, Clovenfords
1873 Grieve, James, Howden, Selkirk
1914 Hogg, Walter, Briarbank, Selkirk
1895 Johnston, John, Chapelhope, Yarrow, Selkirk
1901 Lindsay, William, South Common, Selkirk
1896 Linton, Andrew, Oakwood, Selkirk—*Free Life Member*
1873 Linton, Simon, Oakwood, Selkirk
1909 Linton, William Thomson, Gilmanscleuch, Selkirk
1914 Mill, John S., Greenhill, Selkirk
1880 Mitchell, Thomas, Howford, Selkirk
1884 Morton, Thomas, Torwoodlee, Galashiels
1880 Muir, John, Fernielee, Galashiels
1889 Noble, Robert, of Borthwickbrae, Hawick
1915 Ovens, Adam Beattie, The Peel, Clovenfords
1897 Ovens, William R., of Peel, Clovenfords
1912 Pate, Samuel, The Rink Farm, Galashiels
1919 Patterson, John, Thirlestane Hope, Ettrick, Selkirk
1885 Plummer, Charles H. S., of Sunderland Hall, Selkirk
1908 Pollok, John, Heatherlie Hill, Selkirk
1906 Pringle, J. Lewis, of Torwoodlee, Galashiels
1906 Roberts, Alexander F., of Fairnilee, Clovenfords, Galashiels
1914 Roberts, John, jun., Wellwood Park, Selkirk
1918 Scott, Charles, W.M.D., Carterhaugh, Selkirk
1919 Scott, James Douglas Corse, Major, The Royal Scots, Selkirkshire
1880† Scott, John, of Gala, Galashiels
1907 Stalker, Donald G., The Hall, Galashiels
1914 Stark, Robert, Railway Station, Selkirk
1896 Steedman, John, Ravensheugh, Selkirk
1906 Steel, Major Samuel Strang, of Philiphaugh, M.P., Selkirk
1915 Stewart, Robert, Lewinshope, Selkirk
1863 Turnbull, W. George, Heatherlieburn, Selkirk
1898 Wilkie, John, 21 Island Street, Galashiels
1914 Wilson, Thomas, Ladhope, Yarrow, Selkirk

NUMBER OF MEMBERS, 447.

ENGLAND AND WALES.

Admitted
1899 Abram, Laurence, Education Department, County Hall, Truro, Cornwall
1902 Alder, Thomas Bogue, New Etal Grange, Cornhill-on-Tweed
1914 ALLENDALE, Viscount, Bywell Hall, Stocksfield-on-Tyne, Northumberland
1900 Allison, Herbert W., *last known address*, c/o Mr Short, Home Farm, Ingestre, Stafford—*Free Life Member*
1893 Allison, Hubert, Orleans Club, 29 King Street, St James', London, S.W. 1
1912 Anderson, C., East Chevington, Acklington
1915 Anderson, Colin Woolham (Crosfield's), Cyrnos Ainsdale, near Southport, Lancs.
1850 Anderson, Robert Hood, Devonshire Club, London
1889 Anderson, William D., Chestnut Hill, Keswick
1895 Annand, John F., Armstrong College, Newcastle-on-Tyne—*Free Life Member*
1911 Annett, Henry, Widdrington, Acklington
1912 Anstruther, Henry Torrens, 9 Little College Street, Westminster
1912 Arnold, Edwin Ross, 6 Giltspur Street, London, E.C. 1
1897 Ashby, S. F., 110 Liverpool Road, Birkdale, Southport—*Free Life Member*
1887 Austin, James J. Mein, 9 St Peter's Green, Bedford
1883 Aveling, T. L., Rochester
1913 Ballam, E. J. C., Maple House, Woodridge Road, Ipswich
1890 Bamford, Henry, jun., Leighton Iron Works, Uttoxeter
1899 Barber, Robert, African Chambers, 19 Oldhall Street, Liverpool
1895 Barford, James G. (of Barford and Perkins), Peterboro
1880 Barrett, Robert Bell, Skipton Castle, Skipton
1896 Barron, James, Heathcote Farm, Warwick—*Free Life Member*
1906 Batters, Walter P., Over Hall, Colne Engaine, Earls Colne, Essex
1899 Beattie, James C., Aikton House, Wigton, Cumberland
1903 Beavan, Jim, Corby Bridge, Wetherall, Carlisle
1872 Bell, Andrew, Risley, Derby
1898 Bell, J. P. F., Fulforth, Witton Gilbert, Durham
1895 Bell, Robert, M.D., 15 Half Moon Street, Mayfair, London
1898 Bell, William, Ratcheugh, Alnwick
1910 Bentall, Edmund E. (E. H. Bentall & Co., Ltd.), Heybridge, Maldon, Essex
1900 Berwick, William, Stravithie, Northwold, Norfolk
Bickerton, Henry N. (National Gas Engine Co., Ltd.), Ashton-under-Lyne
1885 Birch, W. de Hoghton, Hoghton Estate Office, Walton Hall, Preston—*Free Life Member*
1915 Bird, G. Bonham, Holcombe, Dawlish
1902 Blackshaw, John F., The Cottage, Bromsgrove

Admitted
1875 Blackwood, Alexander, Estate Office, Leadenham, Lincoln
1900 Blagg, Ernest W. H., Greenhill, Cheadle, Staffordshire
1910 Bland, Charles (R. J. Fulwood & Bland), 31 Bevenden Street, London, N.
1883 Bonallo, W. C., Estate Office, Locko Park, near Derby
1914 Briggs, Walter, Linden Hall, Borwick, Carnforth, Lancashire
1894 Brock, Hugh B. P., Billington Manor, Leighton Buzzard, Beds
1875 Brotchie, G., 18 St Hildas Terrace, Whitby
1913 Brown, J. J., Clydesdale, Crewe
1873 Browne, Colvile, M.R.A.C., Swanley Junction, Kent—*Free Life Member*
1870 Bryan, F. G. D., Drumpellier, Brunswick Road, Gloucester
1875 Bullock, Matt., 48 Prince's Gate, London, S.W. 7
1896 Burkitt, William, B.Sc., N.D.D., Grange Hill, Bishop Auckland—*Free Life Member*
1903 Burlingame, C. H. (International Harvester Co., Ltd.), 80 Finsbury Pavement, London, E.C. 2
1896 Burness, Charles, Estate Agent, Ridge House, Grinkle, Yorkshire
1877 Burr, John M., 37 London Road, Chelmsford, Essex
1907 Burrell, Mrs, Hampton Court, Leominster
1894 Burrell, Charles, Thetford, Norfolk
1914 Burrell, Charles William Wilberforce, Connaught House, Brandon, Suffolk
1900 Burton, John H., County Education Office, Weston-super-Mare—*Free Life Member*
1882 Burton, Dr M. B., *last known address*, Orwell, Lindley, Huddersfield
1878 Cameron, H. E., 66 North Road, Highgate, London, N. 6
1863 Campbell, A. H., Cornwall Gardens, London, S.W.
1882 Campbell, Rear-Admiral H. J. Fletcher, C.B., Beech Lodge, Wimbledon Common
1894 CARLISLE, Rosalind, Countess of, Naworth, Brampton, Cumberland
1912 Carmody, Professor P., F.I.C., F.C.S., Lostwithiel, Cornwall
1887 Carrington, George, M.R.A.C., Missenden Abbey, Great Missenden, Bucks—*Free Life Member*
1907 Carter, George, Engineering Works, Dunstable
1868 Cartwright, T. R. B. Leslie-Melville, Newbottle Manor, Banbury
1884 Clark, J. M., Featherstone Castle, Haltwhistle
1873 Clark, William, *last known address*, 2 Victoria Embankment, Darlington
1881 Clark, W. A., 12 Onslow Square, London, S.W.
1911 Clarke, Walter (Cupiss, Ltd.), Diss, Norfolk
1884 Clinton, H. E. Pelham *last known address*, Bath

Admitted
1912 Colam, R. Leigh, Land Agent's Office, 58 Pall Mall, London, S.W. 1
1894 Colvill, Robert, 3 Cromwell Road, Hove, Sussex
1896 Combe, J. Scarth, Broomhill Grange, Edwinstowe, Newark
1915 Conacher, Murray Blair, Cacketts, Cudham, Kent
1910 Coombs, John W. G. (Richmond & Chandler), The Hollies, Edge Lane, Chorlton-cum-Hardy
1903 Cooper, Sir George A., Bart., 26 Grosvenor Square, London, W. 1
1891 Coward, T. A., c/o The Manager, London City and Midland Bank, Northallerton —*Free Life Member*
1875 Craig, H. V. Gibson, c/o W. Birch Reynardson, Ardwell House, Tetsworth, Oxon
1890 Craig, James, *last known address*, The Banks, Newdigate, Surrey
1898 Crawford, Lionel W., Pelham House, Pelham Road, Retford
1903 Creighton, T. R. (Thos. Reay), Abbey Town, Carlisle
1913 Cridlan, John J., Maisemore Park, Gloucester
1896 Crombie, Walter G., Junior Constitutional Club, Piccadilly, London, W. 1
1883 Cross, Adam P., Brixworth Hall, Northampton
1868 Cruikshank, Edward C., The Sandringham, Torquay
1898 Cryer, John, 182 Cliff Wood Mount, Bradford Road, Shipley, Yorks—*Free Life Member*
1911 Cuninghame, William J., Ewen, Cirencester
1882 Cunngham, T. D. S., Stratton, Godstone, Surrey
1900 Curr, David, Wreay Hall, Carlisle
1906 Curr, James, Wreay Hall, Carlisle
1896 Daine, Mrs (*née* Fraser), Claveton, Seel Road, Huyton, Liverpool—*Free Life Member*
1894 Daine, Herbert S., Inglewood, Manley, Helsby, nr. Warrington—*Free Life Member*
1895 Dallas, James, 8 Heworth Green, York
1894 Davidson, D. J. Russell, *last known address*, 29 Victoria Street, London
1911 Davidson, John D., Highfield House, Neston, Cheshire—*Free Life Member*
1894 Davidson, William, East Learmonth, Cornhill-on-Tweed
1890 Davidson, William, Cattle Salesman, Beal House, Beal, Northumberland
1887 Davies, Edward Smith, Seedgreen Park, Stourport, Worcestershire—*Free Life Member*
1907 Dawkins, Charles W. (Massey Harris Co., Limited), 54 and 55 Bunhill Row, London, E.C. 1
1908 Dawson, William, M.A., B.Sc., School of Forestry, Cambridge
1899 Dellafield, A. H., 37 The Avenue, Brondesbury Park, London, N.W. 6— *Free Life Member*
1901 Denny, William, Narborough, Norfolk
1911 Dickson, R. H. Bruce, Speen, Newbury
1886 Dickson, Thomas A., Estate Office, Overstone Park, Northampton—*Free Life Member*
1895 Dixon, Albert Alexander, Tanwood House, Chaddesley Corbett, nr. Kidderminster, Worcestershire — *Free Life Member*
1895 Dobbie, Æmilius, *last known address*, Trench, Troubridge, Kent

Admitted
1871 Donne, Henry, The Abbey Ruins, Bury St Edmunds
1897 Douglas, A. Hugh, Eden House, Malton
1873 Drysdale, David, Satis House, Leward's End, Saffron Walden, Essex
1894 Dunbar, A. Duff, V.S., 2 Savoy Hill, Victoria Embankment, London, W.C. 2
1879 Duncan, John, Manor Farm, Middleton, King's Lynn
1882 Duncan, John W., Coldrey, Bentley, Farnham, Surrey
1882 Duncan, Robert, *last known address*, Berwick Farm, Stamford River, Essex
1884 Dunn, James, *last known address*, 29 Clavendish Place, Jesmond, Newcastle-on-Tyne
1895 Egginton, Arthur, 11 St Michael's Road, Bedford
1873 Elliot, Professor Thomas J., 20 Moreton Place, Belgravia, London, S.W. 1— *Free Life Member*
1905 Ellison, Francis Beaumont, of Bragleenbeg, Downesleigh, Shefford, Beds
1882 Ensor, Thomas H., 54 South Street, Dorchester—*Free Life Member*
1882 Esson, Robert, Dysart Works, Dysart Street, Finsbury, London, E.C. 2
1902 Eve, Sir H. Trustrum, F.S.I., 2 St Paul's Square, Bedford
1886 Farish, James, *last known address*, 463 Mile End Road, London, E. 1
1887 Farquharson, Alexander, Copperfield, Clifton-on-Teme, Worcestershire
1893 Fergusson, James, Oakley Hall, Harwich, Essex
1869 Fergusson, Robert W., 18 University Mansions, Putney, London
1909 Fisher, George, Farnbrook, Pilling, Garstang, Lancashire—*Free Life Member*
1897 Fitzherbert, W., Manor Farm, Aston Somerville, Broadway, Glos.
1891 Fleet, Wilfrid J., Estates Office, Blenheim Palace, Woodstock—*Free Life Member*
1907 Fleming, David (Dickson, Brown, & Tait), 57 Cross Street, Manchester
1864 Fleming, James, Henney, Barway, Ely, Cambs.
1914 Foden, William (Foden's Limited), Elworth Works, Sandbach
1911 Forbes, Alastair H., Bute Estates Office, Castle Street, Cardiff
1913 Forsyth, Joseph D., Togston East Farm, Acklington
1906 Fox-Brockbank, A. H., The Croft, Kirksanton, Cumberland
1909 Garnet, Frank W., M.R.C.V.S., C.B.E., Dalegarth, Windermere
1892 Gascoigne, Major R. F. T., Letherton Hall, Aberford, Leeds
1879 Gibson, Major J. G., Ashey Manor, Brading, Isle of Wight
1904 Gibson, Samuel, Asplin Farm, Hardwick, Cambridge
1913 Gilbanks, G. W., Rawcroft, Penrith
1889 Gilchrist, Professor D. A., Armstrong College, Newcastle-on-Tyne—*Free Life Member*
1882 Gilkes, Gilbert, Canal Iron Works, Kendal
1913 Gill, John, Thorn Farm, Stainton, Penrith
1871 Gillespie, Alexander, Napier House, Pitville Gate, Cheltenham
1912 Glahome, W. J., Little Haughton, Lesbury
1873 Goddard, H. R., Hammet Street, Taunton, Somerset—*Free Life Member*
1893 Gordon, A. A., M.V.O., Dunbrae, Farningham, Kent

Admitted
1875 Gordon, W. R. G., Barsham Lodge, Sandown, Isle of Wight
1866 Gough, William, Land Agent, Wykeham
1886 Gow, George, Tregothnan Office, Truro
1901 Gower, Cecil Leveson, Bletchingly, Surrey
1881 Graham, George, Moat Farm, Much Hadham, Herts
1873 Graham, Robert G., Laira, Glencairn Park Road, Cheltenham
1919 Graham, Thomas William, of Bogside, Irthington, Carlisle
1888 Graham, William, Eden Grove, Kirkbythore, Penrith
1900 Grant, A. P. F., yr. of Druminnor, New University Club, St James's Street, London, S.W. 1
1891 Greenbank, Jonathan C., Gautby, Lincoln
1895 Greenwood, Thomas P., M.D., B.Sc., County Asylum, Radcliffe, Nottingham—*Free Life Member*
1892 Griffen, Hugh R., *last known address*, 1 Finsbury Square, London, E.C. 1
1914 Guest, Sidney S. (Day & Sons, Crewe, Limited), 29 Temple Row, Birmingham
1915 Gunther, Charles E., Tongswood, Hawkhurst, Kent
1903 Hacking, J. H., Aketon Close, Spofforth, Yorks.
1898 Hacking, Thomas, Education Offices, 33 Bowling Green Street, Leicester—*Free Life Member*
1890 Hadden, Gavin, Breezy Bank, West Porlock, Taunton
1884 Hall, David, Lowlands, West Woodburn, Northumberland
1877 Hall, T. F., *last known address*, Billiter Buildings, Billiter Street, London, E.C.
1867 Hallen, Vety, Lieut.-Col., F.R.S.E., F.R.C.S.E., Pebworth Fields, Stratford-on-Avon
1883 Hamilton, H. W., Willey Park Estate Office, Broseley, Shropshire—*Free Life Member*
1888 Handley, John, Greenhead, Milnthorpe
1884 Hardy, C. W. L., Gittisham, Honiton—*Free Life Member*
1897 Harrison, George, The Hall, Gainford, Darlington
1895 Harrison, John, Chatsworth House, Carlisle
1911 Harrison, Thomas Darwell, Leigh, Lancashire
1899 Harrison, William S., *last known address*, Agricultural College, Aspatria—*Free Life Member*
1887 Haviland, W. A., Brightling Place, Brightling, Sussex
1908 Hayes, Charles H. (W. A. Wood, M. & R. M. Co.), 36 Worship St., London, E.C. 2
1883 Hayward, C. P., Beaumont Manor, Lincoln
1878 Henderson, John, Court Heath, St Albans, Herts—*Free Life Member*
1881 Henderson, W., East Elrington, Haydon Bridge, Carlisle—*Free Life Member*
1916 Hewett, A. W., Manager (Imperial Live Stock Insurance Co., Ltd.), 17 Pall Mall East, London, S.W. 1
1896 Hewison, Robert, Edgecote, Banbury, Oxon—*Free Life Member*
1899 Hewitt, Thomas G., M.R.C.V.S., 22 Dorset Street, Baker St., London, W. 1
1909 Hickes, Robert J., F.R.C.V.S., Market Weighton, Yorkshire
1873 Hill, A. J., St Keverne, Harrow-on-the-Hill—*Free Life Member*

Admitted
1894 Hill, Henry F., Trevalgas, Stratton, Cornwall—*Free Life Member*
1897 Hill, J. Smith, Estate Office, Greystoke, Penrith
1902 Hobbs, James T., Maisey Hampton, Fairford, Gloucestershire
1915 Hogg, W. H., Board of Agriculture and Fisheries (Food Production Department), 72 Victoria Street, London, S.W. 1.
1873 Holliday, Jonathan, Kirkbampton, Carlisle
1909 Hollinghurst, Henry, 127 Fenchurch Street, London, E.C. 3
1882 Holm, Alexander, Lawrence's Farm, Buckland, Betchworth, Surrey
1886 Hooper, C. H., South-Eastern Agricultural College, Wye, Kent—*Free Life Member*
1906 Hope, Cecil A., Woodchester Park, Stonehouse, Gloucester
1878 Hope, John W., John Knight & Sons, Ltd., The Royal Primrose Soap Works, Silvertown, London, E.
1917 Horton, C.E. (George Hadfield & Co., Ltd.), 18 Lightbody Street, Liverpool
1903 Howard, Henry Charles, Greystoke Castle, Penrith
1898 Howard, J. H., Britannia Iron Works, Bedford
1910 Hughes, George, 155 Fenchurch Street, London, E.C. 3
1898 Hunter, Charles E., Wemmergill, Middleton-in-Teesdale
1919 Hunter, Reginald Watt, 23 Ilford Road, High West Jesmond, Newcastle-on-Tyne—*Free Life Member*
1895 Hurley, George, Beech Cliffe Farm, Newcastle, Staffs.—*Free Life Member*
1883 Hutchinson, Alan, *last known address*, 30 Church Street, Durham
1892 Inglis, A., *last known address*, Ross-on-Wye, Herefordshire—*Free Life Member*
1888 Inman, A. H. (care of Glyn, Mills, Currie, & Co.), 67 Lombard Street, London, E.C. 3—*Free Life Member*
1902 Jack, J. Noble, Elsenburg, The Avenue, Lewes, Sussex
1900 Jackson, William, 12 Hawthorne Terrace, New Earswick, Yorks.
1895 Jamieson, Robert, *last known address*, Broughton House, Herne Hill, London
1904 Jardine, John, 20 South Parade, Doncaster
1914 Jarmain, Thomas Martin, Haseley Iron Works, Wallingford, Oxon.
1899 Jefferson, J., Nunthorpe Hall Farm, Nunthorpe, S.O., Yorks.
1893 Jones, Professor C. B., University College of Wales, Aberystwyth—*Free Life Member*
1895 Joynson, Francis, Norton Hall, Worcester
1873 Juckes, R. F., *last known address*, Harley, Much Wenlock—*Free Life Member*
1906 Keegan, Charles B., West Shaftoe, Middleton, Morpeth
1876 Keith, Lieut.-Col. James, Manor House, Castle Acre, Swaffham, Norfolk
1890 Kennard, Cecil, Garrick Club, London
1894 Kennaway, David, The Farm, Cramlington, Northumberland
1875 Kennedy, W., Lewes and County Club, Lewes—*Free Life Member*
1883 Kenyon, J. W., Cecily Hill, Cirencester
1874 Kidd, H., F.R.C.V.S., Exmouth, Devon
1894 Laidlaw, Percy O., Stonecroft, Fourstones, R.S.O.

Admitted
1915 Lambton, Claud, West Newton, Kirknewton, Northumberland
1881 Lang, Hugh, Mingary, Worplesdon, Brookwood
1907 Lang, James, The Home Farm, Hoxne, Eyne, Suffolk
1864 Latta, Mathew Rodger, Redbury, Ardleigh, Essex
1919 Lee, T. W. (William Lee & Sons), Cobnar Gardens, Woodseats, Sheffield
1878 Leggat, Alexander, Mill Place Farm, East Grinstead, Sussex
1875 Lightfoot, H. Le Blanc, Corpus Christi College, Oxford
1912 Lister, Charles A., The Priory, Dursley, Glos.
1891 Lister, Joseph, Fern Cottage, Great Broughton, Cockermouth, Cumberland —*Free Life Member*
1914 Lomas, George A. (A. C. Bamlett Limited), Thirsk
1896 Long, Right Hon. Walter H., M.P., Rood Ashton, Trowbridge
1874 Lothian, M. J., 17 Harley House, Regent's Park, London, N.W. 1
1889 Lowson, J. G. F., Snitterfield House, Stratford-on-Avon
1912 Ludford, Leslie B., Four Oaks, Sutton Coldfield, Birmingham
1888 Lyon, George, Ingatestone, Essex
1905 M'Alister, John, Brancote, Stafford
1897 MacArthur, D. G., M.D., 73 Cadogan Place, London, S.W. 1
1907 MacBean, S., Draycott Cliff, Sudbury, Derby
1913 M'Beath, D. K., F.S.I., Fairfield Works, Bow, London, E. 3
1878 M'Connell, P., Northwycke, Southminster, Essex—*Free Life Member*
1878 M'Cracken, W., Crewe—*Free Life Member*
1898 M'Creath, James, West Cornwall Creamery, Lelant, R.S.O., Cornwall—*Free Life Member*
1891 Macdonald, Charles, *The Field* Office, Breams Buildings, London, E.C. 4
1898 M'Dougall, James T., F.E.S., Dunollie, Blackheath, London, S.E. 3
1893 Macfie, J. W., of Dreghorn, Rowton Hall, Chester
1896 Macfie, R. A., Royal Colonial Institute, Northumberland Avenue, London, W.C. 2
1903 M'Intosh, John W., M.R.C.V.S., Dollis Hill Farm, Cricklewood, London, N.W. 2
1915 Mackay, James W., Jervaulx Abbey, Middleham, Yorks—*Free Life Member*
1875 Mackay, Thomas, Westwood, Coventry
1893 Mackay, William, *last known address*, Greenhill Farm, Kilmerston, Bath
1897 Mackenzie, W. A., Estate Office, West Dean, Chichester
1915 Mackintosh, Alexander, Nitrogen Fertilisers, Ltd., Winchester House, Old Broad Street, London, E.C. 2
1889 Mackintosh, James, Thornbridge Hall, near Bakewell, Derbyshire
1918 M'Lachlan, Alexander, Whiteway Farm, Cirencester, Glos.
1904 Maclagan, Norman, Tremayne, Southbourne on Sea, Hants
1871 M'Laren, James, *last known address*, 64 Marchmont Street, London, W.C. 1
1880 M'Laren, Sir John, Hunslet, Leeds
1883 M'Leod, J. M., 2 Hilldrop Road, Camden Road, London, N. 7
1889 M'Master, William, jun., Iken Hall, Tunstall, Suffolk
1870 M'Monies, J., Coombelands, Addlestone, Surrey

Admitted
1870 M'Naughton, D., 79 Mark Lane, London, E.C. 3
1909 M'William, W. S., Royal Farms, Windsor
1915 Makeague, John, Golborne Park Hackney Stud, Newton-le-Willows, Lancs.
1884 Malcolm, John, M.R.C.V.S., Birmingham—*Free Life Member*
1906 Mann, James H., Pepper Road Works, Leeds
1882 Mann, Robert J., Beaconsfield, Church Stretton
1884 Marriott, Thomas E., The Shooting Lodge, Dene Park, Tonbridge, Kent
1905 Marsden, H. R., Soho Foundry, Leeds
1904 Marshall, A. M'L., Chitcombe, Breda, Sussex
1868 Marshall, James, Gainsborough
1867† Martin, John M., 111 Elgin Crescent, London, W. 11
1913 Martin, Leonard J., Associated Manufacturers Company, 72-80 Mansell Street, Aldgate, London, E. 1
1909 Martin, William Edward, Torkington House, Stamford
1910 Maxwell, Maxwell H., 63 South John Street, Liverpool
1894 Meiklejohn, D. W., Wyndyard Park, Stockton-on-Tees
1869 Menzies, Dr James, Hillside, Langboro Road, Wokingham, Berks.
1891 Menzies, Robert, Merton, Thetford
1891 Methven, E. W., 84 Kenilworth Court, Putney, London, S.W. 15
1884 Middleton, Hilton, Eastfield Road, Benton, Northumberland
1889 Middleton, Sir T. H., C.B., M.A., Board of Agriculture, 4 Whitehall Place, London, S.W. 1—*Free Life Member*
1899 Miller, John, Morton Grange, Retford, Nottinghamshire
1909 Miller, Robert, Papworth St Agnes, Cambridge
1877 Millican, John, *last known address*, Holly Bush, Kirkhampton
1893 Milligan, J. M., F.F.A., 11 Zetland House, Marloes Road, Kensington, London, W. 8
1901 Miln, George P. (Gartons, Limited), Milnholme, Chester
1919 Miln, T. Edward, Win-syl-dene, Latchford Without, Warrington
1900 Mirrlees, Arthur, *last known address*, Checquer House, Ranby, Retford
1911 Mitchell, David, Hayton Castle, Bullgill, Cumberland
1876 Mitchell, John, *last known address*, 6 Clarendon Square, Leamington Spa
1901 Moir, James, Goodwood, Chichester
1883 Mollison, James, C.S.I., M.R.A.C., Ascotts Felbridge, East Grinstead
1903 Montgomery, Hugh, 8 Fenwick Street, Liverpool
1888 Muir, James, *last known address*, Rubers Law, West-by-Fleet, Surrey—*Free Life Member*
1886 Munro, J. C., *last known address*, The Coppice, Syston, Leicester
1888 Murdoch, James, Cardington, Bedford
1881 Murray, Captain A. B., *last known address*, 61 Nevern Square, London
1905 Murray, Joshua, Tarsetthall, Tarset, Northumberland
1884 Murray, W. J., *last known address*, Belbroughton, Stourbridge
1912 Myles, Robert, Surveyor of Taxes, St Austell
1879 Nairne, T. G., Hythe, Southampton
1871 Nelson, Charles, 15 St James Road, London, S.W. 17

Admitted
1896 Ness, John, c/o R. Errington, Victoria Mills, Sunderland
1899 Newton, Thomas, The Bent, Warburton, Warrington—*Free Life Member*
1900 Nicholson, Edward Henry, Colonel 4th Notts V.B. Sherwood Foresters, Newark-on-Trent
1898 Nicholson, W. L., Alnick Grange, Hexham
1882 Nickels, John Tetley, The Day House, Shrewsbury
1893 Nisbet, Robert, Lower Haddon, Bampton, Oxon
1901 Nixon, W., The University, Bristol
1892 Noel, Ernest, Hingham Hall, Attleboro', Norfolk
1879 North, G. F., Strathfieldsaye, Mortimer, R.S.O., Berks
1874 Ogilvy, John F., *last known address*, 13 Collingham Gardens, London, S.W. 5
1910 Oldfield, Wilfrid (Day & Sons, Ltd.), The Brae, Westaston, Crewe
1887 Orde, Colin R. Campbell, Ravendale, Godalming, Surrey
1900 Orr, George W., Hilston Park, Monmouth
1903 Page, Herbert, Hertford
1915 Paget, Leopold C., Middlethorpe Hall, York
1894 Parkin-Moore, William, Whitehall, Mealsgate, Carlisle
1857 Paton, A., Monclova, College Road, Norwood, London, S.E. 19
1909 Patten, John, jun., Hulne Park, Alnwick —*Free Life Member*
1901 Pearson, Andrew, Kithurst Warren, Cootham, Pulborough
1901 Peat, Alexander, Stainbourne Hall, Castle Hedingham, Essex
1897 Peet, John O., B.Sc., Ashbourne House, Spring Hill, Lincoln—*Free Life Member*
1888 Perkins, W. F., M.R.A.C., Boldre Bridge House, nr. Lymington—*Free Life Member*
1905 Peter, James, Berkeley Castle Estate Office, Berkeley
1905 Peter, James A., Brown's Mill Farm, Berkeley
1893 Peter, John Stewart, Great Strode, Netherbury, Dorset
1889 Pilkington, Claude M., Wollaton, Nottingham
1884 Pitcairn, D. D., 20 Tremaine Road, Anerley, London, S.E. 20
1918 Poad, Jeff. R., Thornton House, Tulford, York
1885 Pollock, Thomas, *last known address*, Manor House, Nettlebed, Henley-on-Thames
1905 Porter, John, B.Sc., Shirehall, Hereford
1893 Powell, J. E., Cambrian Iron Works, Wrexham
1897 Profeit, George W., B.Sc. (Edin.), and of Lincoln's Inn, Barrister-at-Law, Estate Office, Charborough Park, Wareham, Dorset
1883 Quibell, W. O., Highfield House, Newark
1870 Ralston, A. R., c/o Robert Clark, Esq., Roy-d-wood, Kirkburton, Huddersfield
1891 Ramsay, Hon. Charles Maule, Carlton Club, Pall Mall, London, S.W. 1
1886 Rannie, D. W., West Hayes, Winchester
1907 Ransome, Edward C., Orwell Works, Ipswich
1870 Rawline, John D., 44 Aughton Road, Birkdale, Southport
1887 Readman, J. B., D.Sc., Belmont, Hereford
1878† Reay, Lord, 35 Berkeley Square, London, W. 1

Admitted
1906 Reed, T. Curwen, *last known address*, Hyde Farm, Stroud, Glos.
1882 Rennie, James, Bowesfield Farm, Stockton-on-Tees
1874 Richardson, George W., *last known address*, Landour, The Shrubbery, Weston-super-Mare
1878 Richardson, R. A., 128 Shiel Road, Newsham Park, Liverpool
1880 Riddle, Andrew, Yeavering, Wooler
1899 Ridley, Matthew A., Hawkhope Hill, Falstone, Northumberland
1912 Roberts, H. E., Monkcastle, Southwaite, Carlisle
1886 Robertson, Charles T. A., Leaton Grange, Wellington, Salop—*Free Life Member*, 1888
1864 Robertson, D. G., *last known address*, Homewood, 8 West Terrace, Eastbourne
1900 Robertson, John, Inspector, *last known address*, Board of Agriculture, 4 Whitehall Place, London, S.W. 1
1874 Robertson, William, Heretannger Club, Hastings
1900 Robinson, J. F., 17 Victoria Street, Westminster, London, S.W. 1
1878 Robinson, Thomas, Cargo, Carlisle
1884 Robson, Jacob, Byrness, Otterburn
1916 Rogers, L. C. (Condrup, Limited), 78 Fore Street, London, E.C. 2
1903 Rootham, Fred. F., Crossways House, Bartlow, Cambridge
1910 Ross, Walter A., 24 Ropemaker Street, London, E.C. 2
1892 Rosslyn, Earl of, Carlton Club, London, S.W.
1900 Rushton, John C., County Education Offices, Stafford—*Free Life Member*
1882 Russel, James, Halstead Place, Sevenoaks
1912 Rycroft, W. W., Drakehill Stud Farm, Bingley, Yorks
1897 Sallerthwaite, Ben. H., Castle Park, Lancaster
1908 Saunders, Charles, 30 Fern Avenue, Newcastle-on-Tyne
1909 Schofield, T. B., 4 St Aidan's Road, Carlisle
1908 Scholes, Walter, National Gas Engine Co., Ltd., Ashton-under-Lyne
1889 Scott, Alexander, Whinfell Park, Penrith
1893 Scott, Robert, Wyndham Hotel, Bootle, Liverpool
1908 Scott, Thomas, Beufre, Beaulieu, Hants
1872 Selby, B. P., Pawston, Mindrum, Northumberland
1890 Sessions, Harold, *last known address*, Lawn Lodge, Dawlish—*Free Life Member*
1894 Seton, Robert S., The University, Leeds —*Free Life Member*
1893 Shaw, Philip A., *last known address*, Hemmington Hall, Derby
1915 Shepherd, Joseph, Union Bank Buildings, 1 Hatton Garden, London, E.C.
1882 Shirlaw, James, 1 Cliffe Terrace, Darlington
1898 Shuttleworth, Alfred (Clayton & Shuttleworth), Lincoln
1908 Simpson, Charles (Hewthorn & Co., Ltd.), Waltoun Lodge, Broxbourne, Herts
1873 Sinclair, Lord, 55 Onslow Square, London, S.W. 7
1885 Slater, Andrew, Tynemouth House, Rothbury
1895 Smith, David Lister, Birdforth School, Easingwold, Yorks—*Free Life Member*

Admitted
1900 Smith, Fred., 115 Brook Street, Macclesfield—*Free Life Member*
1904 Smith, George G. (British Oil and Cake Mills, Ltd.), Cleveland Street, Hull
1872 Smith, G. Purves, M.D., *last known address*, The Hollen, Winscombe, Somerset
1872 Smith, James F., The Cottage, Sutton, Thirsk
1892 Solomon, F. O., Dauntsey's Agricultural School, West Lavington, Devizes, Wilts—*Free Life Member*
1881 Somerville, William, M.A., D.Sc., D.Œc., 121 Banbury Road, Oxford—*Free Life Member*, 1887
1887 Stanhope, John Montague Spencer, Cannon Hall, Barnsley, Yorkshire
1869 Statter, T., *last known address*, Stand Hall, Manchester
1885 Steel, Alexander, Southend, Essex
1898 Steel, John, Hampton Barns, Rochford, Essex
1887 Steele, Daniel, Roycot, Stanted, Essex —*Free Life Member*
1884 Stephen, H. C., Avenue House, Finchley, London
1908 Stewart, James G., M.A., B.Sc., 72 Victoria Street, Westminster, London, S.W.
1908 Stewart, J. King, Secretary, The Fertilisers Manufacturers Association, 68 Fenchurch Street, London, E.C. 3
1877 Stirling, A., *last known address*, 30 Eccleston Street, London, S.W.
1893 Stirling, John, *last known address*, Gosford Grange, Shifnal, Shrops
1906 Stockley, William T., Rose Villa, Garswood, near Wigan—*Free Life Member*
1893 Stockman, Sir Stewart, M.R.C.V.S., Board of Agriculture, 4 Whitehall Place, London, S.W. 1
1884 Stordy, Norman, Thurstonfield Tannery, Carlisle
1905 Storrar, Richard, Holburn Grange, Belford, Northumberland
1905 Strawson, George F., Keal Cotes, 6 Rydal Road, Streatham, London, S.W. 16
1895 Sutton, Alfred, Bridekirk, Cockermouth
1906 Sutton, Arthur Warwick, Seed Merchant, Reading
1914 Sutton, E. P. F., The Royal Seed Establishment, Reading
1865 Swanwick, R., R.A.C. Farm, Cirencester
1894 Taylor, James W., 19 Antrim Street, Tuebrook, Liverpool
1912 Taylor, Neill, General Manager, H. R. Marsden, Ltd., Soho Foundry, Leeds
1893 Taylor, William, Glen Alva, Whitecross Road, Hereford
1918 Thackray, Edgar Jones (Messrs Massey-Harris Ltd.), 41 Broadway, Peterborough
1895 Thomas, Gwyn R., *last known address*, 3 Sandwell Crescent, West Hampstead, London, N.W. 6—*Free Life Member*
1891 Thomson, Duncan, Grand Courts, Rayne, Essex
1894 Tipper, Charles J. R., 6 Beechwood, The Green, Kendal—*Free Life Member*
1897 Tod, James A., Thirlsey Farm, Hackness, Scalby, R.S.O.
1912 Tonks, A. G., 31 Addison Mansions, Kensington, London, W. 14
1912 Torrance, George, Over Inzievar, Oakley
1896 Townshend, Joseph H., Fellougley, nr. Coventry—*Free Life Member*
1889 Turner, Thomas Warner, Welbeck, Worksop, Notts
1908 Unite, Sydney George, 291 Edgware Road, London, W. 2

Admitted
1893 Veitch, W. H., Culverdene, West Cliff Road, Bournemouth
1897 Wakerley, Frederick, 64 London Road, Grantham—*Free Life Member*
1900 Wale, Bernard N., Seale-Hayne College, Newton Abbot, Devon—*Free Life Member*
1896 Walker, Frank P., Armstrong College, Newcastle-on-Tyne
1889 Walker, Thomas G., Symonds Hyde, Hatfield, Herts
1913 Wallace, Falconer L. (Candacraig, Strathdon), *last known address*, Wardington Manse, Banbury, Oxon.
1882 Wallace, George, 28 Albert Palace Mansions, Battersea Park, London, S.W. 11
1882 Wallace, R. Hedger, 4 East Grove, Cardiff
1899 Wallace, William, 5 Broadlands Road, Highgate, London, N. 6
1902 Wallace, William B., Cuddington Court, Cheam, Surrey
1898 Walters, Sir J. Tudor, M.P. (Mills & Co.), Leicester
1873 Walton, G. K., Long Compton, Shipston-on-Stour—*Free Life Member*
1894 Ward, Martin H., New Farm, Horton Asylum, Epsom, Essex — *Free Life Member*
1896 Waters, Arthur, Coopersale, Epping, Essex
1890 Waters, J. C. Dun, Plaish Hall, Church Stretton, Salop
1896 Waterson, D. M., Lupton, Churston, S. Devon
1910 Watson, George, Lowfield House, Wigton, Cumberland
1883 Watson, H. A., North-Eastern Railway Office, York—*Free Life Member*
1886 Watson, Captain W. S., 8 The Esplanade, Plymouth
1868 Watt, James (Little & Ballantyne), Knowefield, Carlisle
1881 Weber, F. H., Hawthornden, Mumbles, Swansea—*Free Life Member*
1897 Webster, Herbert, 1 Granby Terrace, Harrogate
1860 Welsh, John, Stonewood, Bean, nr. Dartford, Kent
1912 White, R. G., B.Sc., Department of Agriculture, University College, Bangor, N. Wales
1891 White, W. E. C., Chatwood, Wokefield Green, Mortimer, Berks — *Free Life Member*
1905 Whitelaw, Graeme A., 1 Lowther Gardens, London, S.W.
1894 Whittaker, John D., Oxford and Cambridge Club, Pall Mall, London, S.W. 1—*Free Life Member*
1899 Whyte, John D. B., Elveden Hall, Suffolk
1900 Wigram, Oswald L., Nord Vue, Armathwaite, Cumberland
1898 Williams, David D., University College of Wales, Aberystwyth — *Free Life Member*
1914 Wilmot, Samuel M., St Philips, Bristol
1908 Wilson, Fenwick, Marden, Whitley Bay, Northumberland
1915 Wilson, John, Morton Hall, Wingate, Durham
1911 Wilson, R. M., B.Sc., East Anglian Institute of Agriculture, Chelmsford, Essex
1900 Wilson, Robert, 30 Cambridge Street, Newcastle-on-Tyne
1896 Wilson, R. Riddell, 17 Queen Victoria Street, London, E.C. 4
1892 Wilson, William, Goodyhills, Maryport —*Free Life Member*

Admitted
1858 Wilson, William, *last known address*, Borough, Sanderstead, Croydon, Surrey
1896 Wilton, James P., 16 Beresford Road, Wallasey, Cheshire—*Free Life Member*
1919 Winter, Ramsay, Good Hope, Streetly, Sutton Coldfield
1901 Wood, Charles, The Poplars, Hepworth, Diss, Suffolk
1881 Woodroffe, D., *last known address*, Chase View, Rugeley
1897 Wylie, Alexander, *last known address*, Cravens, Wennington, Lancs.
1898 Wylie, Thomas, Ashwell, nr. Baldock, Herts.

Admitted
1895 Wyllie, David, Timsbury, Romsey, Hants.
1896 Young, David, Westover Farm, Clatford, Andover, Hants.
1919 Young, J. H. (William Lee & Sons), 36 Havelock Street, Sheffield
1879 Young, R. W., Billeswell Manor, Litterworth
1893 Young, William, Lowthian Gill, Cotehill, Cumberland
1876 Young, W. S., The Close Farm, Embleton, Bass Lake, Cockermouth
1905 Yuill, Andrew, Wyvenhoe, Redlands Road, Reading
1877 Zetland, Marquis of, K.T., Aske, Richmond, Yorkshire

Number of Members, 467.

IRELAND.

1907 Adams, J. M., Agricultural Station, Clonakilty, Co. Cork
1893 Ballingall, Robert Rennie, Adare, Limerick
1910 Barton, Henry Dupre Malkin, The Bush, Antrim
1882 Beresford, J. G. M., St Huberts, Belturbet
1903 Brownlee, John, The Grange, Monasterevan, Co. Kildare
1901 Burns-Lindow, Mark, Northfields, Abbeyleix, Queens County
1873 Campbell, George, Dollardstown House, Athy, Co. Kildare — *Free Life Member*
1892 Campbell, J. R., Department of Agriculture, Dublin—*Free Life Member*
1908 Crozier, John D., Department of Agriculture, Upper Merrion Street, Dublin
1877 Fennessy, Thomas, Grange Villa, Waterford
1891 Forbes, A. C., Avondale Forestry Station, Rathdrum, Co. Wicklow
1876 Gilchrist, Andrew, Grovedale, Golden Ball, Co. Dublin
1884 Goulding, Sir W. J., "Millicent," Sallins, Co. Kildare
1899 Hinchcliff, Joseph H., Department of Agriculture, Upper Merrion Street, Dublin—*Free Life Member*
1876 Maconchy, J. A., Kildare Street Club, Dublin—*Free Life Member*
1900 Pimlott, James, Department of Agriculture, &c., 4 Upper Merrion Street, Dublin—*Free Life Member*
1906 Raffan, James, Kilfrush, Knocklong, Co. Limerick
1896 Robertson, Andrew R., Department of Agriculture, Upper Merrion Street, Dublin—*Free Life Member*
1902 Simpson, David S., Department of Agriculture, Skene House, Ballyglass, Co. Mayo
1898 Wade, Thomas, Courthouse, Naas, Co. Kildare—*Free Life Member*
1892 Wilson, James, jun., Royal College of Science, Dublin—*Free Life Member*

Number of Members, 21.

THE COLONIES.

1882 Ainslie, John, Ainslie's Ranch, Prince Albert, Saskatchewan, Canada
1904 Allan, William, M.A., B.Sc., Principal, Agricultural College, Elsenberg, Cape Colony
1893 Anderson, George H., 529 Spence Street, Winnipeg
1887 Banerjee, N. N., Calcutta—*Free Life Member*
1883 Basu, G. C., Bangabasi College, Calcutta —*Free Life Member*
1910 Bayne-Jardine, T. E., Inspector, Ministry of Agriculture, Cairo (8 Drummond Place, Edinburgh)
1876 Bean, William, Rosebank, Winnipeg, Manitoba
1881 Blyth, A. H., Frankfield, Manitoba
1851 Bogie, John, Auckland, New Zealand
1881 Brock, H., M.R.C.V.S., c/o Post Office, Wynyard, Saskatchewan, Canada
1899 Brown, Ernest C., 488 Young Street, Winnipeg, Canada—*Free Life Member*
1876 Brown, J. H., Wairoa, Napier, New Zealand
1864 Brydon, James, Pleasant Point, Timaru, New Zealand
1864 Brydon, Herbert, Gladstone, Manitoba Canada

Admitted
1879 Brydone, W. S., Freelands, Palmerston South, New Zealand
1874 Burn, Forbes, Veterinary College, Brunswick Street, Fitzroy, Melbourne—*Free Life Member*
1879 Cantlie, Charles A., *last known address*, Natal
1901 Carlyle-Bell, A., The British Colony, Battleford, Canada
1902 Chirnside, George Thomas, Werribee Park, Melbourne
1899 Cole, James T., Box 12, Post Office, Ulverstone, Tasmania (temporary—Bythorn, Torquay)
1868 Craig, The Hon. R., Chapelton, Jamaica
1872 Currie, James J., Blinkbonny, Birtle, Manitoba
1881 Curror, Peter, Banchory Farm, Nutana Post Office, Saskatchewan
1894 De la Mothe, Joseph T., Grand Bacolet Estate, St David's, Grenada, West Indies—*Free Life Member*
1888 Drieberg, Christopher, Agricultural Department, Colombo, Ceylon—*Free Life Member*
1894 Duff, J. K. Mackenzie, *last known address*, South Africa
1898 Dunn, William, Tobacco Creek, Miami, Manitoba, Canada
1901 Edgar, John Ingram, District Veterinary Surgeon, c/o Resident Magistrate, Pietersburg, Transvaal, S.A.
1894 Fielding, J. B., St Williams, Norfolk, Ontario, Canada
1911 Forbes, Thomas B., Gedong Estate, Bagan Serai, Perak, F.M.S.
1895 Forrest, James, Honolulu Plantation Co., Ajea, Oahu, H.T.
1896 Forrest, T. L., Cowichan Station, British Columbia
1904 Fowlie, Patrick, N.D.A., N.D.D., College of Agriculture, Elsenburgh, Mulder's Vlei, Cape Colony
1906 Fraser, Adam, Gellatly, British Columbia, Canada
1913 Frost, George H., Dairy Education Association, 12 Victoria Road, Ghorpuri, Poona
1870 Gordon, R. W., British Columbia (c/o John Gibson, Howford, Peebles)
1899 Gowans, Major J., P.O. Box 99, Cleveland, Transvaal
1912 Graham, Charles T. (Graham & Co.), Rangoon, Burma
1897 Guthrie, Captain P. H., Comox, Vancouver Island, B.C., Canada—*Free Life Member*
1898 Gwillim, Robert, Duval, Saskn., Canada—*Free Life Member*
1874 Hamilton, W. C., Lumsden Regina, Assa., Canada
1909 Hogg, James, Anduramba, *viâ* Crow's Nest, Queensland
1897 Holm, Alexander, jun., Agricultural Department, Pretoria, S.A.
1895 Hood, Thomas, F.S.I., c/o The Gharbich Land Company, Cairo
1897 Howie, James L., Cairndhu Estate, Odzie, So. Rhodesia, S.A.
1861 Hunter, Herbert, c/o John Ewart, Gleniris, Corinda, Brisbane, Queensland
1893 Husband, Thomas R., Woodville, Wellington, N.Z.
1899 Hutcheson, William, R.R. No. 2, Woodstock, Ontario, Canada
1873 Irvine, G. F., *last known address*, New South Wales
1900 Jardine, Warburton C., Wardour Estate, Caura, Trinidad, B.W.I. — *Free Life Member*

Admitted
1899 Jones, A. W., Minefield, Stanncreek, British Honduras
1893 Knight, John, Mayfield Park, Birkenhead, Auckland, New Zealand
1893 Little, James, Taneatna, Whakatam, Auckland, New Zealand
1900 Lloyd-Williams, W. R., Department of Agriculture, H.M. Customs Buildings, Wellington, New Zealand — *Free Life Member*
1876 Logan, J. W., M.I.Mech.E., Representative, P.O. Box 2037, Marshall's Buildings, Johannesburg, S.A.
1918 Loton, Arthur, Springhill, Spencer's Brook, Western Australia
1885 Lowrie, William, Prof. of Agriculture, *last known address*, Roseworthy, South Australia—*Free Life Member*
1885 Macdonald, A. C., Director of Agriculture, Nairobi, British East Africa—*Free Life Member*
1891 M'Dougal, Jas., Bonnyrigg, St Andrews, New Zealand
1871 M'Dougall, J. W., *last known address*, Peninsular Cottage, Atherley Junction P. O., Ontario, Canada
1895 M'Farlane, Robert, Minburn Post Office, Alberta, Canada
1905 Mackenzie, Hugh, Tooloomba, Marlborough, Queensland
1903 Mackie, A. Kirk, Brandon, Manitoba
1896 Marjoribanks, Hon. Coutts, Lovely Bay, Vernon, British Columbia
1880 Martin, William, 125 Wellington Crescent, Winnipeg—*Free Life Member*
1897 Mason, William G., Manager, Lobatsi Farms, Lobatsi, Bechuanaland Protectorate, South Africa—*Free Life Member*
1873 Miller, Colin W., Luffness, Mirani, *viâ* Mackay, Queensland
1886 Moos, N. A. F., Director, Government Observatory, Bombay — *Free Life Member*
1886 Mukerji, N. G., Professor of Agriculture, Sibpur, Bengal
1878 Mundell, Walter, Tourisfield, Brandon, Manitoba
1888 Mutter, Major J. M., Somenos Ranch, Somenos, E. and N. Reg., Victoria, B.C., Canada
1880 Nisbet, George, Toronto, Canada
1898 Nobbs, Eric A. (Ph.D., Giessen), Department of Agriculture, Salisbury, Rhodesia—*Free Life Member*
1907 Ogilvie, George H., c/o T. Cook & Sons, Rangoon, Burma (J. & J. Ogilvie, 13 Albert Square, Dundee)
1877 Paterson, John, Cowichan Station, Vancouver Island, British Columbia
1894 Paterson, John W., B.Sc., Ph.D., Professor of Agriculture, University of Western Australia, Perth, W.A.
1899 Potts, Professor George, Grey University College, Bloemfontein, South Africa—*Free Life Member*
1875 Pringle, A. T., Oaklea, Plumpton, *viâ* Rooty Hill, N.S.W., Australia
1877 Pudney, Robert L., 16 Wallace Street, Herne Bay, Auckland—*Free Life Member*
1901 Rabagliati, Duncan S., Fidra, Zeitoun, Egypt
1898 Rackham, Stanley, Lloydminster, Sack, N.W.T., Canada—*Free Life Member*
1908 Reid, Alexander, Knapdale, Gove, New Zealand
1898 Roberts, Harry L., Grimsby, nr. Hamilton, Ontario
1903 Robertson, W. Brown, jun., Kashao, Banket Junction, S. Rhodesia

Admitted
1859 Robertson, W. M., King Street, Chatham, New Brunswick, Canada
1909 Rutherford, Dr J. G., C.M.G., Commissioner, Board of Railway Commissioners for Canada, Ottawa, Ontario
1899 Sampson, Hugh C., Trichinopoly, S. India—*Free Life Member*
1881 Sandison, Mark, Berg Vleit, Gourton, Natal, S.A.—*Free Life Member*
1875 Scobie, N. F. Feorlig, Fort-Macleod, N.W.T., Canada
1880 Scott, Charles, South Africa, c/o John Scott, 30 Ludgate, Alloa
1892 Scheult, Louis C., Santa Rosa, Arima, Trinidad—*Free Life Member*
1890 Shaw, Alex., Plume Ranche, Woolchester, Alta., Canada
1883 Shennan, J. K., Farningham, Hidcote Station, Natal
1883 Shepherd, John, Desbarats, Algoma, Canada
1898 Sim, James, Districts Forest Officer, King William's Town, South Africa —*Free Life Member*
Admitted
1918 Sircar, Utpal, Bogra Government Nursery, Bengal, India
1895 Smith, A. Rae, Farm Manager, Lovedale, Cape Colony
1907 Smith, William, jun., Dairy Expert, Quartermaster-General's Department, Simla, India
1894 Tait, John, Eakindale Post Office, Salcoats, Sask., Canada
1893 Wallace, John William, W.S., State School, Woodanilling, Western Australia
1900 Watt, James W., Sintaluta, Sask., Canada
1900 Watt, John A., Sintaluta, Sask., Canada
1890 White, Alexander, Wonderboom, Pretoria, South Africa
1903 Wilkinson, H. Bevis, Bukit Tabil, Palating, Selangor, F.M.S.
1879 Wilson, John, jun., Gilbrea, Oakville, Co. Halton, Ontario—*Free Life Member*
1858 Wotherspoon, Archibald, West Oxford, Canterbury, New Zealand

Number of Members, 106.

FOREIGN COUNTRIES.

1880 Aalvik, E. A., Ostenso, Hardanger, Norway
1882 Alexander, A. S., M.D.C., V.S., Professor of Veterinary Science, University of Wisconsin, Madison, Wis., U.S.A.—*Free Life Member*
1881 Auld, R. C., The Scottish American, 190 William Street (P.O. Box 995), New York
1868 Baird, Arthur E., Brussels
1871 Bruce, George C., Staunton, Virginia
1875 Crerar, Donald, Estancia San Alonzo, Estacions Bavio, F.C. Ensenada, Buenos Ayres
1874 Cruickshank, George, *last known address*, 243 Warsaw Avenue, Chicago
1876 Cruickshank, J. W., 32 Via delt Grta Canina, Florence, Italy
1902 Cunningham, Henry, Florence, Mississippi, U.S.A.
1880 Dundas, T. G., 39 North State Street, Chicago
1900 Elliot, Andrew Stirling, "El Arbolito," La Magdalena, Estancion Barreto, F.C.P. Provinciale Cardoba, Argentina
1876 Fleming, D. G., Hacienda de San' Isidro, Villa Coronads, Jiminez, Chihuahua, Mexico
1899 Fraser, George M., Estancia "La Selmira," Gualeguaychú, Entre Rios, Argentine
1898 Fraser, Samuel, Geneseo, Livingston County, New York—*Free Life Member*
1855 French, J., Sortkjär, Kvissel, Denmark
1871 Heggie, Henry, Roseburg, Douglas Co., Oregon, U.S.A.
1909 Holmberg, Algot, Norrköping, Sweden
1875 Houstoun, George L., of Johnstone Castle, Kyrcura, Cyprus
1903 Kennedy, Daniel (late Kelso), America
1896 Lawson, George, Cabana Azcuenaga, Olivos, Buenos Ayres, F.C.C.A.
1913 M'Candlish, Professor A. C., Department of Animal Husbandry, Iowa State College, Ames, Iowa, U.S.A.
1878 M'Kay, David, Fort-Wayne, Indiana
1879 Mackenzie, Murdo, Trinidad, Colorado, U.S.A.
1878 Nonnen, J. E., Norway—*Free Life Member*
1866 Shiels, George, Monett, Mo., U.S.A.
1897 Sproat, Hugh, Thurman, *viâ* Mountain Home, Elmore Co., Idaho, U.S.A.—*Free Life Member*
1915 Thorbergsson, Ian, Kanjeangur, Akureyri, Iceland
1869 Tweeddale, George W., Ivy Hill, Warminster, Nelson County, Virginia, U.S.A.
1895 Vuigner, Raymond, 46 Rue de Lille, Paris

Number of Members, 29.

FREE LIFE MEMBERS.

HOLDERS OF AGRICULTURAL DIPLOMA.

Those marked with an * are also holders of the First-Class Certificate in Forestry.

By a Bye-law passed in 1873, with reference to the Supplementary Charter of 1856, successful Candidates for the Society's Agricultural Diploma became eligible to be elected Free Life Members of the Society.

This arrangement terminated in 1900, when the Highland and Agricultural Society of Scotland and the Royal Agricultural Society of England discontinued the independent Examinations in Agriculture held by the two Societies, and instituted in their stead a Joint-Examination for a National Diploma in Agriculture (N.D.A.)

Admitted

1899 Abram, Laurence, Education Department, County Hall, Truro, Cornwall
1879*Aitken, John M., Norwood, Lockerbie
1882 Alexander, A. S., M.D.C., V.S., Professor of Veterinary Science, University of Wisconsin, Madison, Wis., U.S.A.
1898 Allan, Robert, Halfway House, Whitburn
1900 Allison, Herbert W., *last known address*, c/o Mr Short, Home Farm, Ingestre, Stafford
1876 Anderson, R. Lang, Airds, Appin
1897 Ashby, S. F., 110 Liverpool Road, Birkdale, Southport

1887 Banerjee, N. N., Calcutta
1883*Bardgett, John, 48 Market Street, Aberdeen
1896 Barron, James, Heathcote Farm, Warwick
1883 Basu, Giris Chandra, Bangabasi College, Calcutta
1884 Benson, R. A., Duchy of Cornwall Office, Liskeard, Cornwall
1885 Birch, Walter de Hoghton, Hoghton Estate Office, Walton Hall, Preston
1878 Bramwell, John, Cornwall Park, Newton Stewart
1899 Brown, Ernest C., 488 Young Street, Winnipeg, Canada
1891 Brown, John, 21 York Place, Perth
1873 Browne, Colvile, M.R.A.C., Swanley Junction, Kent
1900 Bruce, William, B.Sc., East of Scotland College of Agriculture, Edinburgh
1896 Burkitt, William, B.Sc., N.D.D., Grange Hill, Bishop Auckland
1874 Burn, Forbes, Veterinary College, Brunswick Street, Fitzroy, Melbourne
1900 Burton, John H., County Education Office, Weston-super-Mare
1882 Buttar, Thos. A., Corston, Couper-Angus

1873 Campbell, George, Dollardstown House, Athy, Co. Kildare
1892 Campbell, J. R., Department of Agriculture, Dublin
1885 Campbell, Robert J., Cuil, Castle-Douglas
1879 Cannon, James, Crown Place, Castle-Douglas
1878 Carr, Robert, Grindon, Norham, Northumberland
1887 Carrington, George, M.R.A.C., Missenden Abbey, Great Missenden, Bucks
1884 Clinton, H. E., Pelham, 1 Lion Place, Borthwick Hill, Bath

Admitted

1899 Cole, James Thomson, c/o Post Office, Ulverstone, Tasmania
1891 Coward, T. A., c/o Manager, London City & Midland Bank, Northallerton
1880 Craig, William, Corriemuckloch, Amulree
1898 Cryer, John, 182 Cliff Wood Mount, Bradford Road, Shipley, Yorks

1896 Daine, Mrs (*née* Fraser), Claverton, Seel Road, Huyton, Liverpool
1894 Daine, Herbert S., Inglewood, Manley, Helsby, Warrington
1887 Davies, Edward Smith, Seedgreen Park, Stourport, Worcestershire
1894 De la Mothe, Joseph, Grand Bacolet Estate, St Andrew's Parish, Grenada, West Indies
1899 Dellafield, A. H., 37 The Avenue, Brondesbury Road, London, N.W. 6
1886 Dickson, Thomas A., Estate Office, Overstone Park, Northampton
1895 Dixon, Albert Alex., Tanwood House, Chaddesley Corbett, near Kidderminster
1888 Drieberg, Christopher, Agricultural Department, Colombo, Ceylon
1892 Duncan, James L., 49 St Laurence Road, Clontarf, Dublin
1887 Dunlop, Andrew T. L., Lyonston, Maybole

1873 Elliot, Professor Thomas John, M.R.A.C., 52 Bessborough Terrace, Westminster, London, W.
1882 Ensor, Thomas Henry, 54 South Street, Dorchester

1891*Fleet, W. J., Estates Office, Blenheim Palace, Woodstock
1891 Forbes, A. C., Avondale Forestry Station, Rathdrum, Co. Wicklow
1895*Fraser, Alexander, Earnside, Alves, Forres
Fraser, Miss Margaret N. (Mrs Daine)
1898 Fraser, Sam., Geneseo, Livingston County, New York

1900 Galloway, William, Braxfield Road, Lanark
1885 Gibb, Robert Shirra, Boon, Lauder
1889 Gilchrist, Professor D. A., Armstrong College, Newcastle-on-Tyne
1873 Goddard, H. R., M.R.A.C., Hammet Street, Taunton
1894 Goodfellow, Alexander, High School, Kelso
1895 Greenwood, Thomas, M.D., County Asylum, Radcliffe, Nottingham

Admitted
1892 Greig, Sir Robert Blyth, LL.D., M.C., Board of Agriculture for Scotland, 29 St Andrew Square, Edinburgh
1898 Gwillim, Robert, Duval, Saskatchewan, Canada

1898 Hacking, Thomas, Education Offices, 33 Bowling Green Street, Leicester
1887 Haig, Robert, Dollarfield, Dollar
1883 Hamilton, H. W., Willey Park Estate Office, Broseley, Shropshire
1884 Hardy, C. W. L., Gittesham, Honiton
1899 Harrison, William S., late Agricultural College, Aspatria
1900 Hattrick, J. M., 7 and 9 Bridge Street, Sydney, Australia
1878 Henderson, John, Court Heath, St Albans, Herts.
1881 Henderson, W., East Elrington, Haydon Bridge, Carlisle
1896 Hewison, Robert, Edgecote, Banbury, Oxon.
1873 Hill, Arthur James, M.R.A.C., St Keverne, Harrow-on-the-Hill
1894 Hill, Henry F., Trevalgas, Stratton, Cornwall
1899 Hinchcliff, Joseph H., Department of Agriculture, Upper Merrion Street, Dublin
1897 Holm, Alexander, jun., Agricultural Department, Pretoria
1898*Home, J. H. Milne, Irvine House, Canonbie
1886*Hooper, Cecil H., South-Eastern Agricultural College, Wye
1897 Howie, James L., Cairndhu Estate, Odzie, So. Rhodesia
1895 Hurley, George, Beech Cliffe Farm, Newcastle, Staffs.

1888 Inman, A. H., care of Glyn, Mills, Currie, & Co., 67 Lombard Street, London, E.C.
1891 Irving, R. J., *last known address*, Balmacneil, Ballinluig

1900 Jackson, William, Windsor Castle, Annotto Bay, Jamaica, B.W.I.
1900 Jardine, Warburton C., Wardour Estate, Caura, Trinidad, B.W.I.
1890 Jeffrey, John J., Arthur's Place, Lockerbie
1893 Jones, C. B., University College of Wales, Aberystwyth
1873 Juckes, R. F., M.R.A.C., *last known address*, Harley, Much Wenlock

1875 Kennedy, William, M.R.A.C., Lewes and County Club, Lewes, Sussex

1889 Ledingham, J. K., North Plaidy, Turriff
1898 Leslie, John, The Briars, Bieldside, Aberdeen
1896 Linton, Andrew, Oakwood, Selkirk
1891 Lister, Joseph, Fern Cottage, Great Broughton, Cockermouth, Cumberland
1900 Lloyd-Williams, William R., Department of Agriculture, H.M. Customs Building, Wellington, New Zealand
1885 Lowrie, William, Prof. of Agriculture, *last known address*, Roseworthy, So. Australia

1876 Maconchy, John Arthur, M.R.A.C., Kildare Street Club, Dublin
1878 M'Connell, Primrose, Northwycke, Southminster, Essex
1878 M'Cracken, William, Crewe

Admitted
1898 M'Creath, James, West Cornwall Creamery, Lelant, R.S.O., Cornwall
1885 Macdonald, A. C., Director of Agriculture, Nairobi, British East Africa
1915 Mackay, James W., Jervaulx Abbey, Middleham, Yorks.
1900 Mackenzie, Edward J., Hilton Farm, Tain
1887 Maitland, Harry Reid, Haddo, Methlick
1884 Malcolm, John, M.R.C.V.S., Birmingham
1880 Martin, William, 125 Wellington Crescent, Winnipeg, Canada
1897 Mason, William G., Manager, Lobatsi Farms, Lobatsi, Bechuanaland Protectorate, South Africa
1889 Middleton, T. H., Board of Agriculture, 4 Whitehall Place, London, S.W.
1886 Moos, N. A. F., Director, Government Observatory, Bombay
1888 Muir, James, *last known address*, Rubers Law, West Byfleet, Surrey
1886 Mukerji, Nitya Gopal, *last known address*, Bhowanipur, Calcutta
1891 Munro, Duncan, 3 Dalrymple Pl., Edinburgh
1875 Murray, Robert W. E., Blackford House, Blackford Avenue, Edinburgh

1899 Newton, Thomas, The Bent, Warburton, Warrington
1898*Nobbs, Eric Arthur, Department of Agriculture, Salisbury, Rhodesia
1878 Nonnen, John Edward, Norway
1882 Norrie, William, Cairnhill, Monquhitter, Turriff

1894 Paterson, John Waugh, B.Sc., Ph.D., Professor of Agriculture, University of Western Australia, Perth, W.A.
1897 Peet, John O., B.Sc., Ashbourne House, Spring Hill, Lincoln
1888 Perkins, Walter Frank, M.R.A.C., Boldre Bridge House, near Lymington
1900 Pimlott, James, Department of Agriculture, &c., 4 Upper Merrion Street, Dublin
1899*Potts, Professor George, Grey University College, Bloemfontein, South Africa
1877 Pudney, R. L., M.R.A.C., 16 Wallace Street, Herne Bay, Auckland

1898 Rackham, Stanley, Lloydminster, Sack, N.W.T., Canada
1889 Raeburn, Norman, *last known address*, 49 Manor Place, Edinburgh
1882*Reid, Peter, Haining, 38 Sherbrooke Avenue, Glasgow, S.S.
1898 Robb, Daniel K., Graham Terrace, Stewarton
1896 Robertson, Andrew R., Department of Agriculture, Upper Merrion St., Dublin
1888 Robertson, Charles T. A., Leaton Grange, Wellington, Salop
1900 Rushton, John C., County Education Offices, Stafford

1899 Sampson, Hugh C., Trichinopoly, S. India
1881 Sandison, Mark, *last known address*, Berg Vleit, Gourton, Natal, S.A.
1892 Scheult, L. C., Santa Rosa, Arima, Trinidad
1894 Seton, Robert S., The University, Leeds
1890 Sessions, Harold, *last known address*, Lawn Lodge, Dawlish
1878 Sharp, J. J., Ewingston, Humbie
1898 Sim, James, Districts Forest Officer, King William's Town, South Africa
1895 Smith, David Lister, Birdforth School, Easingwold, Yorks.

Admitted
1882 Smith, E. Hedley, B.L., Whittinghame, Prestonkirk
1900 Smith, Fred., 115 Brook Street, Macclesfield, Cheshire
1888 Smith, J. R. C., Mowhaugh, Kelso
1892 Solomon, F. O., Dauntsey's Agricultural School, West Lavington, Devizes, Wilts
1887*Somerville, William, M.A., D.Sc., D.Œc., 121 Banbury Road, Oxford
1897 Sproat, Hugh, Thurman, *viâ* Mountain Home, Elmore Co., Idaho, U.S.A.
1887 Steele, Daniel, Roycot, Stansted, Essex
1891 Stevens, Alexander Buchan, Mains of Kilgraston, Bridge of Earn
1876 Sutherland, Alexander, Rampyards, Watten, Caithness

1895 Thomas, Gwyn Reid, *last known address*, 3 Sandwell Crescent, West Hampstead, London, N.W.
1894 Tipper, Charles J. R., 6 Beechwood, The Green, Kendal
1896 Townshend, Joseph H., Fellougley, nr. Coventry
1898 Trotter, John, *last known address*, c/o M'Taggart, 5 Argyle Park Terrace, Edinburgh

1898 Wade, Thomas, Courthouse, Naas, Ireland
1897 Wakerley, Fred., 64 Loudon Road, Grantham

Admitted
1900 Wale, Bernard N., Seale-Hayne College, Newton Abbot, Devon
1896 Walker, F. P., Armstrong College, Newcastle-on-Tyne
1878 Wallace, Professor Robert, University, Edinburgh
1873 Walton, George Kent, Long Compton, Shipston-on-Stour, Warwickshire
1894 Ward, Martin Hammond, New Farm, Horton Asylum, Epsom, Surrey
1883 Watson, H. A., North-Eastern Railway Office, York
1881 Weber, F. H., Hawthornden, Mumbles, Swansea
1894 Weir, James, Woodilee Farm, Lenzie
1891 White, W. E. C., Chatwood, Wokefield Green, Mortimer, Berks
1894 Whittaker, John D., Oxford and Cambridge Club, Pall Mall, London, S.W.
1898 Williams, David D., University College of Wales, Aberystwyth
1892 Wilson, James, jun., Royal College of Science, Dublin
1879 Wilson, John, jun., Gilbrea, Oakville, Ontario
1892 Wilson, William, Goodyhills, Maryport
1896 Wilton, James P., 16 Beresford Road, Wallasey, Cheshire
1900 Wood, James, 24 Cluny Drive, Edinburgh
1882 Wright, Sir Robert P., Board of Agriculture for Scotland, 29 St Andrew Square, Edinburgh

Number of Diploma Holders, 162.

HOLDERS OF FIRST-CLASS CERTIFICATE IN FORESTRY.

Also those in the above list marked with an *.

1895 Annand, John F., Agricultural College, Newcastle-on-Tyne
1911 Davidson, John D., Highfield House, Neston, Cheshire
1895 Davidson, William, Edgerston, Jedburgh
1911 Doull, Donald, M.A., A.R.C.Sc., High School, Kelso
1909 Fisher, George, Farnbrook, Pilling, Garstang, Lancs.
1897 Guthrie, Patrick Hugh, Cornox, Vancouver Island, B.C.
1919 Hunter, Reginald Watt, 94 St George's Terrace, Newcastle-on-Tyne
1892 Inglis, Alexander, *last known address*, Estate Office, Howcaple Cottage, Ross-on-Wye, Herefordshire

1915 Mackay, James W., Jervaulx Abbey, Middleham, Yorks.
1892 Menzies, John C., The Rowans, Colinton
1909 Mitchell, Alex., Rosebery, Gorebridge
1909 Patten, John, jun., Hulne Park, Alnwick
1901 Rabagliati, Duncan S., Fidra, Zeitoun, Egypt
1892 Robertson, Wm., Blinkbonny, Earlston
1903 Scott, Frank, Jeanie Bank, Old Scone, Perth
1906 Stockley, William T., Rose Villa, Garswood, near Wigan
1915 Watson, Harry, Darnaway, Forres
1907 Wilson, A. Frank, C.D.A., 164 Braid Road, Edinburgh
1892 Wilson, John Hardie, D.Sc., F.R.S.E., St Andrews

Number of Certificate Holders, 29.

ABSTRACT.

Honorary Members	9
Foreign Associates	4
Glasgow	1238
Perth	924
Stirling	495
Edinburgh	819
Aberdeen	649
Dumfries	496
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